Volume 20, Number 3 | March 2021

The Orchadian

Official Journal of the Australasian Native Orchid Society Inc.

Royal Botanic Gardens
Melbourne
30 APR 2021

Cymbidium canaliculatum near Cooyar, Queensland Photo Graham Corbin

The Orchadian

Official Journal of the Australasian Native Orchid Society Inc.
Founded 1963. Dedicated to the study and conservation of Australasian native orchids.
Patron: David Cannon
ISSN 04774-3342
Volume 20, Number 3 | March 2021
Print Post Approved: 100000950

Contents

Editorial	Peter B. Adams	99
President's Report	Peter B. Adams	100
Instructions for Contributors to *The Orchadian*	Peter B. Adams	101
Awards Numbers 397–401		141
Restoration of Montane Grasslands Benefits *Prasophyllum crebriflorum* D.L.Jones (crowded leek-orchid) in Northwest Tasmania	Mark Wapstra, Kerri Spicer, Adam Crook and James Dick	102
Dendrobium Yarra Quest: Characteristics of a Cool-Growing *Dendrobium bigibbum* Hybrid	Peter B. Adams	108
Zeuxine oblonga R.S.Rogers and C.T.White - The Hairy Jewel Orchid	Pam Porteous	116
Weather and Orchid Culture in 2020–21	Sheryl D. Lawson	121
The Use of Fire and Slashing to Manage Permanent-swamp Populations of *Thelymitra circumsepta* Fitzg.	Leo R. Davis and Richard J.P. Davies	127
Healthy Roots Make Healthy Plants	David Butler	132
Cymbidium section *Austrocymbidium* Schltr.	Graham Corbin	135

Copyright

Material in *The Orchadian* is subject to copyright and may not be reproduced without express written permission of ANOS Inc.

Submission of Articles

Items for consideration for publication should be submitted via e-mail to the editor, formatted for MS Word (DOC, DOCX, RTF). Images must be provided as separate files. Please include your contact information for communication and publication. Editorial Guidelines, including instructions for authors, are available on the ANOS website.

Advertising Costs per Four Issues

June - March

1/6 page	$120.00
1/4 page	$160.00
1/2 page	$300.00

Please contact the Treasurer for further information.
PO Box 393 Officer VIC 3809

www.anos.org.au

ANOS Inc. Directory

P.O. Box 393
Officer, VIC 3809

Council:

President	Peter Adams
Vice-President	Warren Wilcox
Secretary	Roslyn Capell
Treasurer	David Brewster
Past President	Sheryl Lawson
Councillor	Barry Dudman
Councillor	Callyn Farrell
Councillor	Malcom McGowan
Conservation Officer	Geoff Curry
Membership Officer	David James
	membershipofficer@anos.org.au
Webmaster	Callyn Farrell
Webmaster	Malcom McGowan

Judging:

National Registrar	Mike Fish
NSW Registrar	Gerry Smee
QLD Registrar	David James
VIC Registrar	Jennie Wilson

The Orchadian:

Editor	Peter Adams
	pbadams45@gmail.com
Editorial Associate	Kevin Thiele (WA)
Editorial Associate	Matt Renner (NSW)
Editorial Associate	Mark Wapstra (TAS)
Editorial Associate	Roslyn Capell (NSW)
Editorial Associate	Warren Wilcox (QLD)
Editorial Associate	Sheryl Lawson (VIC)
Layout	Leneve & Warren Wilcox

Editorial

In this issue, there is a good balance of topics on conservation, culture, epiphytes and terrestrials and the impact of weather. Mark Wapstra and Leo Davis have reports on the conservation of lesser-seen *Prasophyllum* and *Thelymitra* species in Tasmania and South Australia respectively. Pam Porteous found *Zeuxine oblonga* on a trip to north Queensland and has successfully cultivated a plant in a warm house. Graham Corbin writes of walking in an area in southern Queensland where all three Australian *Cymbidium* species can be seen and Peter Adams sets out the 15-year results of breeding a cool-growing *Dendrobium* hybrid containing *D. bigibbum*.

Orchid culture is never far from mind for most ANOS members, and cultural articles from different regions are always welcome. David Butler emphasises the important role of roots in maintaining plant health and Sheryl Lawson looks at the effects of a wetter, cooler summer in 2020–21, which has produced varied effects on the growth and cultural requirements of different orchid groups.

Correction

The Orchadian 20(2): 44 ANOS National Awards. *Sarcochilus* Effie 'Ena' did not receive ACC/ANOS. The ACC/ANOS award was made to *S.* Effie 'Sheryl', a large plant with eight inflorescences, which is recorded on p.42.

Peter Adams

President's Report

Since ANOS began in Sydney in 1963 there have been many changes, although the basic objectives have not altered. There are currently about 20 independent groups, including one in New Zealand. Membership of ANOS Inc. is by individual membership through subscription to *The Orchadian*. The growth to a national organisation has created expanding financial and corporate responsibilities carried out through ANOS Council. New members may not be aware of the activities of ANOS Inc. Council which meets every two months to consider reports by the President, Treasurer, Editor, National Registrar of Judges, Conservation Officer, Membership Officer and Website and Facebook officers. I set out below some of the major ANOS activities, which involve work from Council members every month of the year.

The Orchadian is a major part of the work of ANOS Inc., gathering contributions, reviewing all articles, including peer review of scientific and taxonomic submissions, and circulating national award details and photographs. There is a complex layout process before printing and distribution, and there is usually a small financial deficit overall after production and postage costs. The journal relies on major contributions from a small group of people across the country, and more writers are required and encouraged to participate.

ANOS Inc. has other key activities – maintaining the ANOS judging system through training of judges and assessing plants for awards, promoting awareness of conservation issues, and digital presence through our website and newsletter which keeps members informed of issues and events about Australian and Australasian orchids. There have also been special events, for example, ANOS conferences and shows.

In the past 18 months Council have been active in attending to necessary corporate issues. Based on the ANOS constitution requirements, insurance for the directors has been organised. Past issues of *The Orchadian* will become available online through an agreement to lodge them with the Biodiversity Heritage Library (BHL), where many biological journals and periodicals are now available. There is an ANOS judging panel operating in New South Wales, Queensland, and more recently in Victoria. An ANOS judging training group is now established in Tasmania, with members at Certificated Judge level.

Restrictions for The Covid 19 pandemic and its restrictions since February 2020 have curtailed many ANOS activities, including group meetings, and necessitated the postponement of the 2020 Annual General Meeting. The risks of infection, lockdowns, travel restrictions and restrictions on group meetings continue. Every effort will be made to find a workable solution for the 2021 Annual General Meeting to proceed, and the best process is yet to be decided. Different modes of meetings, including the use of digital technology, and voting procedures are not practical for some of our members, and all modalities are being considered, including the usual face-to-face meeting.

ANOS national conferences commenced in 1990 and have occurred every three years. It has become increasingly difficult to stage this event due to rising costs, limited venues and declining participation by

host groups due to limited capacity to plan, organise and run events. Many orchid meetings and events have been cancelled in 2020–21 and it is uncertain when planning for future events can successfully resume. Combining a conference with other national events and modifying the format may offer future opportunities. Any groups who are interested in the staging of an ANOS conference and show can contact the ANOS executive.

I have some concerns about the general decline in the production of Australian orchid species and hybrids, including those from commercial nurseries. Some well-known ones have closed, and others are likely to finish business in the next few years. If growers want to have ongoing availability of plants suitable for their regions, they may need, in small groups or as individuals, to start making crosses and developing seedlings. There can be a preference by some growers to seek out and purchase divisions of successful plants, often at high expense, which may be worth the investment, but can also result in failure to succeed in a different location. Raising seedlings allows more opportunity to develop new and improved plants which can be shared with others. This can add considerable interest to ANOS groups and is presently only occurring in a few regions. Do not ignore the trends and find a bit later on that there are too few quality plants to start or update a collection.

Peter Adams

Instructions for contributors to *The Orchadian*

The Orchadian is a major recurring activity of ANOS Inc. It records and informs members on a range of subjects of interest and creates a historical account for future generations. There are guidelines for contributors on the website and the essential requirements are to forward contributions digitally with a word document containing the text only, and with tables and figures as separate files. Photographs should be supplied in JPEG high resolution, in sharp focus and without editing. Legends for photos, tables and illustrations must be provided in separate files.

Articles are usually 3–10 pages (700 words of text per page), following the format of recent issues. Larger articles and research reports require a brief Summary, and it is our convention to place this at the start before the Introduction. A short biography of two to three lines and a contact address and email must also be provided.

Please contact the editor if there are any difficulties with meeting these requirements. The wide variety of material means that we permit some flexibility to potential authors, who can follow the headings and approach for articles similar to their own. In publishing a contribution in *The Orchadian*, the copyright is with ANOS Inc. and writers agree that ANOS may lodge it with the Biodiversity Heritage Library in the future.

Peter Adams

Restoration of Montane Grasslands Benefits *Prasophyllum crebriflorum* D.L.Jones (crowded leek-orchid) in Northwest Tasmania

Text and Photos Mark Wapstra, Kerri Spicer, Adam Crook and James Dick | mark@ecotas.com.au

Abstract

Several shrub-invaded *Poa*-dominated native grasslands in montane northwest Tasmania are being subject to operational research trials with the purpose of restoring the grassland values. Monitoring of post-trial sites has resulted in the detection of two new subpopulations of the narrow-range endemic and threatened (endangered) *Prasophyllum crebriflorum* (crowded leek-orchid) from within intensively managed shrub-mulched and/or burnt sites. The new subpopulations from sites subject to intensive restorative management are both exciting and encouraging, providing strong validation of the objectives and methods.

Key words

Prasophyllum crebriflorum, crowded leek-orchid, montane grassland, restoration, northwest Tasmania.

Introduction

Prasophyllum crebriflorum, known as the crowded leek-orchid (Plates 1 and 2), is a narrow-range endemic restricted to the montane native grasslands of northwest Tasmania. It was first found on 15 December 1999 on a field day focussed on the conservation management of these grasslands. Paul Hydes, a local naturalist attending the field day, noticed a small patch of *Prasophyllum* and brought it to the attention of Mark Wapstra and Brooke Craven, who collected material for submission to David Jones in Canberra. Unfortunately, the material was unsuitable for a formal type collection (fridge too cold in transit) so a formal collection was made the following year by Hans and Annie Wapstra that now comprises the type (Australia. Tasmania: Surrey Hills Freehold (North Forests Burnie), Westwing Plain (precise locality withheld), 670 m, 14 Dec. 2000, *J.E. & A. Wapstra (ORG 3269)* (holo CANB, iso HO, MEL)).

Since its discovery, the species was listed as endangered (Schedule 4) on the Tasmanian *Threatened Species Protection Act 1995* and subsequently as Endangered on the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*. Nearly all the sites supporting the species are on private freehold land known as Surrey Hills, which is managed by Forico Pty Limited, and previously by Gunns Limited and North Forest Products. This large part of Tasmania is managed for both commercial wood production (hardwood plantations) and conservation. The latter includes several species of threatened flora and fauna, including the endemic ptunarra brown butterfly, and the grasslands themselves. Management has largely centred on periodic ecological burning to maintain the grasslands (Craven 1998; Gunns 2010; Forico Pty Limited 2016).

The habitat of *P. crebriflorum* is native grassland dominated by species of *Poa*, principally *P. labillardierei* and *P. gunnii*, a vegetation type called highland *Poa* grassland (coded as GPH) under Tasmania's system of vegetation classification (Kitchener and Harris 2013). GPH is classified as a threatened vegetation community under Schedule 3A of the Tasmanian *Nature Conservation Act 2002*. The global, national and Statewide significance of Tasmania's montane grasslands has been widely recognised (Kirkpatrick and Duncan 1987; Kirkpatrick et al. 2020). Studies on the floristic structure and composition of the Surrey Hills grasslands in recent years (Spicer and Wapstra 2017;f. Kirkpatrick et al. 2020) has revealed that several grasslands are being invaded by shrub

species, principally *Hakea microcarpa*, *Bellendena montana* and *Epacris gunnii*, sometimes to the exclusion of tussock grass species. Attempting to recover the shrub-invaded grasslands to grass-dominated grasslands using fire alone has not always been successful. As a consequence of the recent studies, a proposal was made to intervene more aggressively and undertake mulching of shrubs, with or without a post-mulch burn (Spicer and Wapstra 2020). One particular grassland known as Gatcomb Plain South was selected for the principal trial site.

Gatcomb Plain South

Gatcomb Plain South is a ca. 26 ha grassland that had become progressively invaded by shrubs, with much of the grassland hardly classifiable as such, although historical evidence indicated the site was once virtually pure *Poa*-dominated grassland (compare Plates 3 and 4).

The site was subject to various operational trial combinations summarised in Figure 1 as:

1. low mulch only
2. high mulch only
3. low mulch and burn
4. high mulch and burn
5. burn only.

Mulching was undertaken in April and May 2018 (Plate 5) and burning was undertaken in mid-October 2018 (Plate 6). Additional management activities have also been undertaken to facilitate the grassland recovery. Browsing control (shooting) was undertaken periodically between November 2018 to January 2020 and weed control has been undertaken since February 2019. In 2020, two years following management treatments, shrub covers had significantly reduced, and tussock grass cover was beginning to recover (Spicer and Wapstra 2020). Visual observations in 2021 indicated further recovery and that Gatcomb Plain South

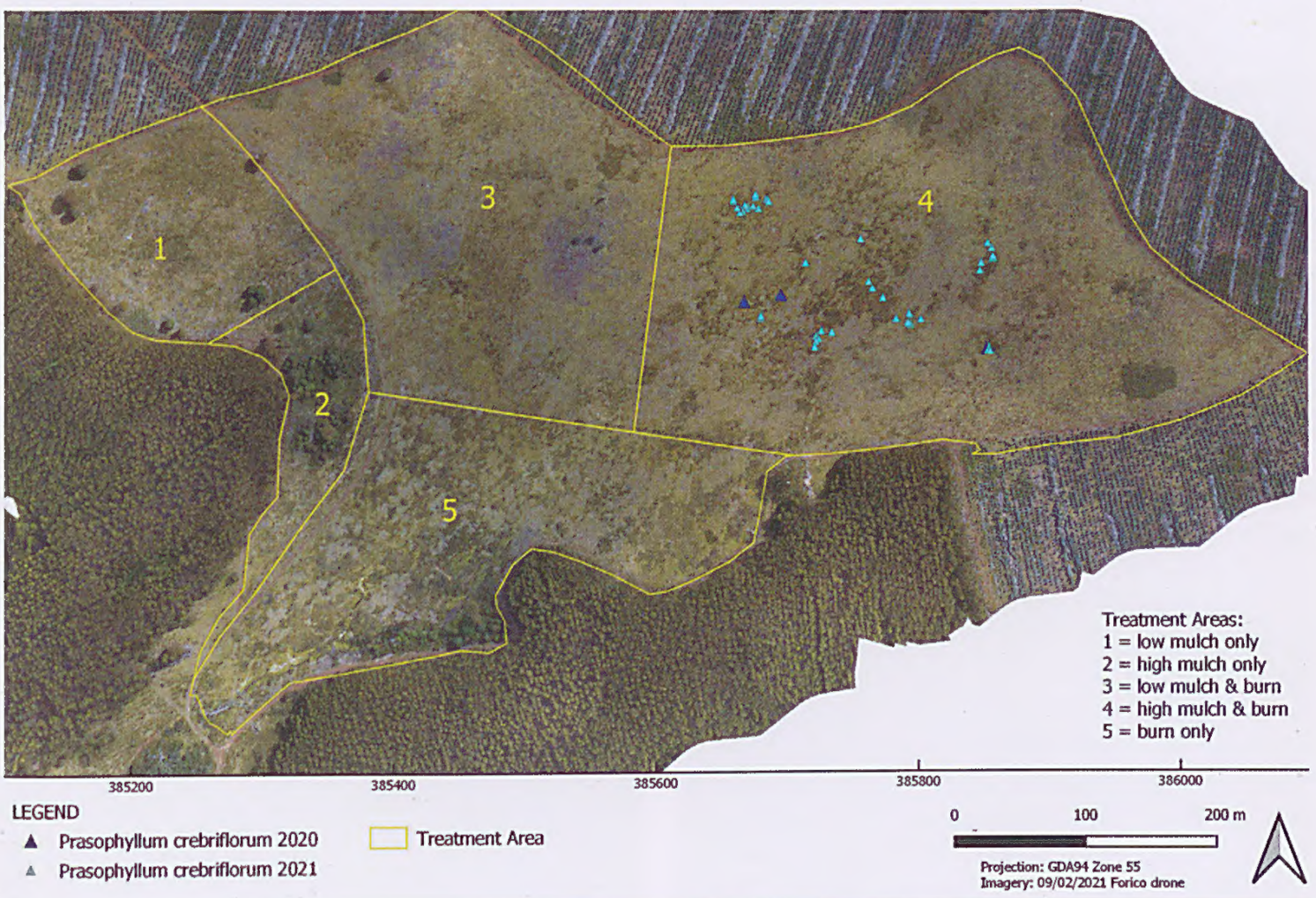


Fig. 1 Treatment areas

Plate 1 *Prasophyllum crebriflorum* whole plant

Plate 2 *Prasophyllum crebriflorum* close up

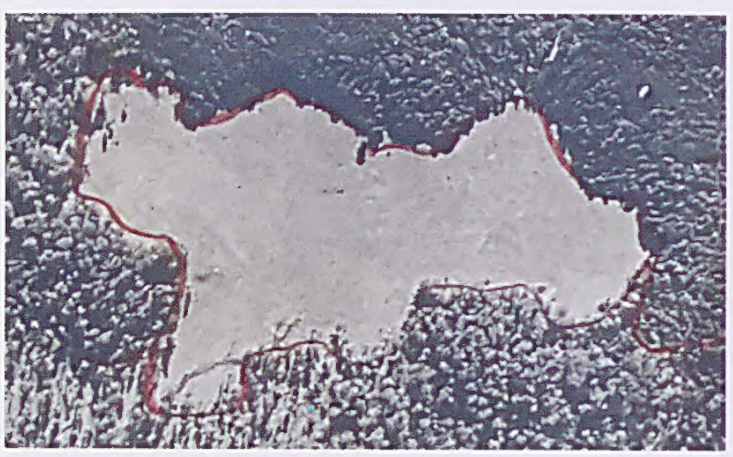


Plate 3 Aerial view of site in 1949

Plate 4 Google image of site October 2015

Plate 5a Mulching machine

Plate 5b Elevated mulching April and May 2018

Plate 6 Burning of site October 2018

Plate 6a Post burn of site

Plate 7 Return of grassland at site 2021

Plate 8 *Hakea microcarpa* small-fruit hakea

Plate 9 *Bellendena montana* mountain rocket

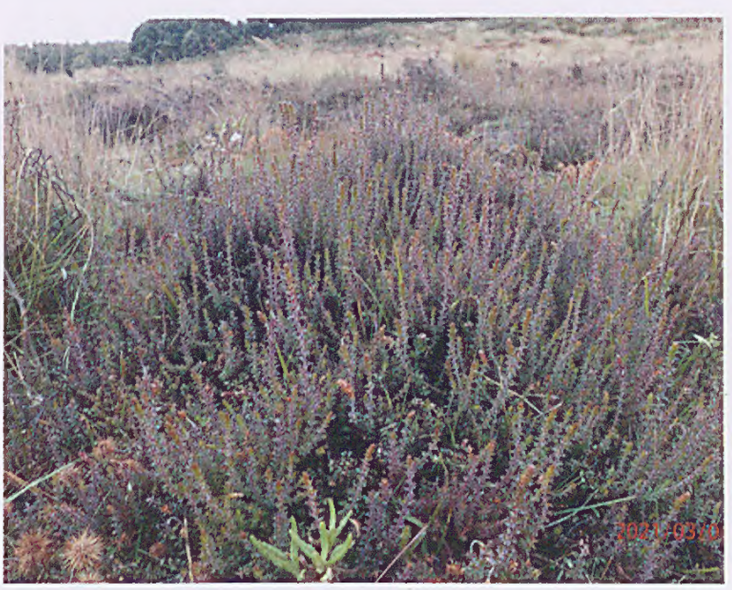


Plate 10 *Epacris gunnii* coral heath

Plate 11 Volunteers at site

can once again be called a grassland (Plate 7), no longer dominated by *Hakea microcarpa* (Plate 8), *Bellendena montana* (Plate 9) and *Epacris gunnii* (Plate 10).

Observations

On 3 March 2020 in the second year of post-trial monitoring, a single flowering specimen of *P. crebriflorum* was discovered in the middle of one of the more intensively managed parts of Gatcomb Plain South. To say that we were excited barely described the feeling of elation. Why? Because prior to the intensive actions intended to restore the grassland to its former glory, we had no records of the species from this site. It is of course possible it was hiding amongst the dense shrubs that dominated the grassland, in some areas forming an almost impenetrable thicket. However, the excitement was also because the novel location represented a range extension of ca. 11 km. Although this does not sound like much, for a narrow-range endemic it is significant. Two days later, two more specimens were encountered while discussing the ongoing management of the site.

The volunteer group Threatened Plants Tasmania (TPT) has been actively involved in the demographic monitoring of various subpopulations (sites) of *P. crebriflorum*. A decade of such dedication was reported by Collier (2020). TPT was engaged to undertake extension surveys in Gatcomb Plain South on 30 January 2021. Nine volunteers led by two of the authors (MW, KS) fanned out and swept across the Gatcomb Plain South. The elation of the previous March was replaced by a new level of jubilation. We found 79 specimens of *P. crebriflorum* on the grassland (Plate 11), all from intensively managed previous shrub-invaded parts of the plain. This site is now one of the key populations for the species: from zero to hero.

As an adjunct to the above observation, on 29 January 2021, we also found a single flowering specimen of *P. crebriflorum* in another Surrey Hills grassland known as Thompsons Park. This shrub-invaded site was also experimentally managed, first through fire in November 2018, which was largely unsuccessful,

and then through mulching in March 2020. This became the second novel population detected in managed shrub-invaded grasslands being restored to their former glory.

This short paper is intended to alert readers to an exciting discovery that has arisen as a consequence of much broader conservation-directed operational trials in the Surrey Hills montane native grasslands. The more detailed and broader ecological findings from various trial sites will be reported elsewhere.

Acknowledgments

The grassland restoration project is a collaborative operational research trial being undertaken by Forico Pty Limited in conjunction with the principal authors and several colleagues. Members of Threatened Plants Tasmania participated in the extension surveys on Gatcomb Plain South and several other grasslands in 2021, which continues a long tradition of cooperation between this group and the successive land managers, which is planned to continue.

References

Collier P (2020) *Monitoring of Prasophyllum crebriflorum (Crowded Leek-orchid) at Surrey Hills Grasslands, Northwest Tasmania 2008–2018: Summary of Findings and Conclusions*. Report by Phil Collier, June 2020.

Craven B (1998) Vegetation *Management Plan for Surrey Hills Grassland Reserves Northwestern Tasmania*. Unpublished report to North Forest Burnie.

Forico Pty Limited (2016) *Surrey Hills Grassland Management Plan*. Forico Pty Limited, Launceston.

Gunns (2010) *Surrey Hills Grassland Management Plan*. Gunns Limited, Burnie.

Jones DL (2003) A revisionary treatment of four species of *Prasophyllum* R.Br. (Orchidaceae) loosely related to *P. correctum* D.L.Jones. *Muelleria* 18: 99–109.

Kirkpatrick JB and Duncan F (1987) Distribution community composition and conservation of Tasmanian high altitude grassy ecosystems. *Australian Journal of Ecology* 12(1): 73–86.

Kirkpatrick J, Gilfedder L, Duncan F and Wapstra M (2020) Frequent planned fire can prevent succession to woody plant dominance in montane temperate grasslands. *Austral Ecology* 45(7): 872–879.

Kitchener A and Harris S (2013) *From Forest to Fjaeldmark: Descriptions of Tasmania's Vegetation*. 2nd ed. Department of Primary Industries, Parks, Water & Environment, Hobart.

Spicer K and Wapstra M (2017) *Vegetation Condition Assessments of Threatened Non-Forest Vegetation Types on Surrey Hills, Northwest Tasmania*. Unpublished report to Forico Pty Limited.

Spicer K and Wapstra M (2020) *Surrey Hills Grasslands Operational Trial, Scrub-invaded Grasslands – Gatcomb South*. A report to Forico Pty Limited, Tasmania.

Mark Wapstra is a consultant ecologist with a life-long interest in Tasmanian native orchids and a particular interest in the conservation management of threatened species.

Kerri Spicer is an ecological consultant and member of Threatened Plants Tasmania who has a background in vegetation management and a strong love of native plants.

Adam Crook is the Native Forest & Fire Management Coordinator with Forico Pty Limited who oversees the operational management of Forico's conservation areas and is passionate about good native grassland management.

James Dick is the Resource Information Officer with Forico Pty Limited, with a long history of involvement in the management of the Surrey Hills native grasslands and their threatened fauna and flora species.

Dendrobium Yarra Quest: Characteristics of a Cool-Growing *Dendrobium bigibbum* Hybrid

Text and Photos Peter B. Adams | pbadams45@gmail.com
School of Biosciences, University of Melbourne and National Herbarium, Royal Botanic Gardens, Melbourne

Summary

A purple-red flowered *Dendrobium* Inquest crossed with two different varieties of *D. speciosum* produced *D.* Yarra Quest plants of modest stature with well-presented star-shaped flowers and a wide colour range. They flower in early spring in southern Victoria before the main *Dendrobium* flowering season. The racemes have up to 20 flowers which have a variable amount of bright purple spotting, from nil on white flowers to prominent spotting on yellow ones. The plants are an attractive option for extending the flowering season, and they grow steadily in cool southern Australian conditions, developing faster in warmer summers.

Introduction

In cool southern Victorian and Tasmanian conditions, many hot/cold *Dendrobium* hybrids containing *D. bigibbum* do not flower well or tend to flower sequentially, so an optimal display is not achieved. They require a dry period in winter and are assisted by providing protection from extreme cold and some supplementary heating. Hybrids with low amounts of *D. bigibbum* (3–6%) are likely to be more successfully cultured but the positive influences of the warm growing species may be lost. We usually focus on cool-growing rather than warm-growing species and hybrids in breeding (Adams 2019), and this crossing was an experimental departure into somewhat unknown territory.

Neil Finch of DUNO registered *D.* Inquest (*D.* Intense x Aussie Quest) in 2004, and David Adams exhibited a plant with one raceme of eight attractive splash purple-red flowers as the centrepiece of a mini-stand at the Yarra Valley Orchid Show in mid-October 2004. The plant had grown slowly over several years in an unheated plastic roofed shade house in the Dandenong Ranges northeast of Melbourne, where winter temperatures are down to 0° C, and the summer growing season is relatively short with a temperature range of 14–42° C. These conditions were not regarded as optimal for hot/cold dendrobiums, even for hybrids like *D.* Inquest which have a low percentage (6%) of *D. bigibbum.*

We were interested in breeding hybrids with some *D. bigibbum* that would grow better than *D.* Inquest and thought that a cross with *D. speciosum* might improve growth and flower count under cool to cold winter conditions while letting colour come through in the progeny. It was not easy to predict the outcome of the resulting *D.* Yarra Quest which has background influences of 23.6 % *D. kingianum*, 12.5 % *D. tetragonum*, 60.8 % *D. speciosum* and 3% *D. bigibbum.* Particular uncertainties were the influences of low-levels of *D. bigibbum* on plant growth, flowering time, size of flowers and width of flower segments.

Breeding and Plant Development

There was only one plant of *D.* Inquest in my collection, and the quality of the raceme and flowers were assessed as suitable for breeding. In October 2005, it was used as a pod parent and crossed with *D. speciosum* var. *speciosum* 'Windermere' and *D. speciosum* var. *curvicaule* 'The Goddess' AM/AOC. About 50 seedlings were deflasked into a fine pine bark mix in January 2007. They grew fairly slowly in an unheated shade house and began to flower in late August 2011. A few of the first seedlings to flower were exhibited at ANOS Melbourne Suburbs Group spring show in early October 2014, when they had been in flower for about 4 weeks and were still in good condition. It was evident that they were early

Plant Name	Cane length (cm)	Flowers per raceme	Flower width x height (cm)	Labellum width (cm)	Flower colour	Comments
PARENT *D. speciosum* var. *speciosum* 'Windermere'	32	70-80	5.6x5.7	0.7	Bright yellow; purple barred labellum	Known to allow colour penetration in hybrids
Stardust	29.5	19	4.1x4.1	0.65	Bright yellow; deep purple marks on outer tepals	Tall plant, high quality, striking colour
Lime Spider	18.4	9	3.6x5.2	1.0	Yellow, purple and mauve labellum	Two-tone labellum
Blanchlip	19.5	10	4.2x6.3	0.9	Lemon-yellow; pale mauve spotted labellum	Long petals
Lemon Drops	16.8	14	4.1x5.1	0.65	Lemon-yellow; white labellum	Short compact plant; long labellum
Frilly Lip	21.3	9	4.6x5.4	0.9	Bright yellow; mauve-purple labellum	A few purple spots; frilly- edge labellum
Heidi	33.5	20	5.9x6.1	0.65	Yellow-green, purple on outer third and reverse; yellow labellum	Robust tall plant, large leaves and flowers; narrow labellum
Millie	31.4	20	6.0x7.1	0.9	Pale lemon with purple spots; purple labellum	Robust tall plant; two tone purple labellum; large flowers
Kerry	19	9	4.0x3.8	0.8	Pale green; solid purple labellum	Short plants; unusual green flower colour
PARENT *D. speciosum* var. *curvicaule* 'The Goddess'	35	75-85	5x7.2	0.8	Cream; purple barred labellum	Influence uncertain
Moondust	21.2	13	4.6x5.4	0.8	Green turning yellow with fine purple spots; yellow and purple labellum	Erect plant; two-tone labellum;
Lime and Passionfruit	17	16	4.1x5.2	0.85	Lime-yellow; purple labellum with central yellow strip	Opens green and turns yellow; quality display
Boom	19	8	5.4x7.3	1.0	Pale yellow with purple spots on tepals and reverse; mauve labellum	Large flowers; lax raceme; wide labellum and forelobe
Lemon Giant	27.8	21	4.6x5.3	0.95	Yellow-off white; labellum with few purple spots	Tall plant; long labellum
Fletcher	28.3	14	4.1x5.5	0.9	Yellow with few purple spots; deep purple labellum	Robust plant; short racemes
Charlie	20.4	17	4.0x5.3	1.05	Very pale mauve; labellum white with a few purple spots	High quality; broad segments and labellum; unusual pastel colour
Mr. Green	14.8	10	3.7x3.9	1.0	Green which persists; small purple spots on tepals and labellum	Pastel colour

Table 1 Characteristics of Plants of *Dendrobium* Yarra Quest

Dendrobium speciosum var. *curvicaule* 'The Goddess' AM/AOC

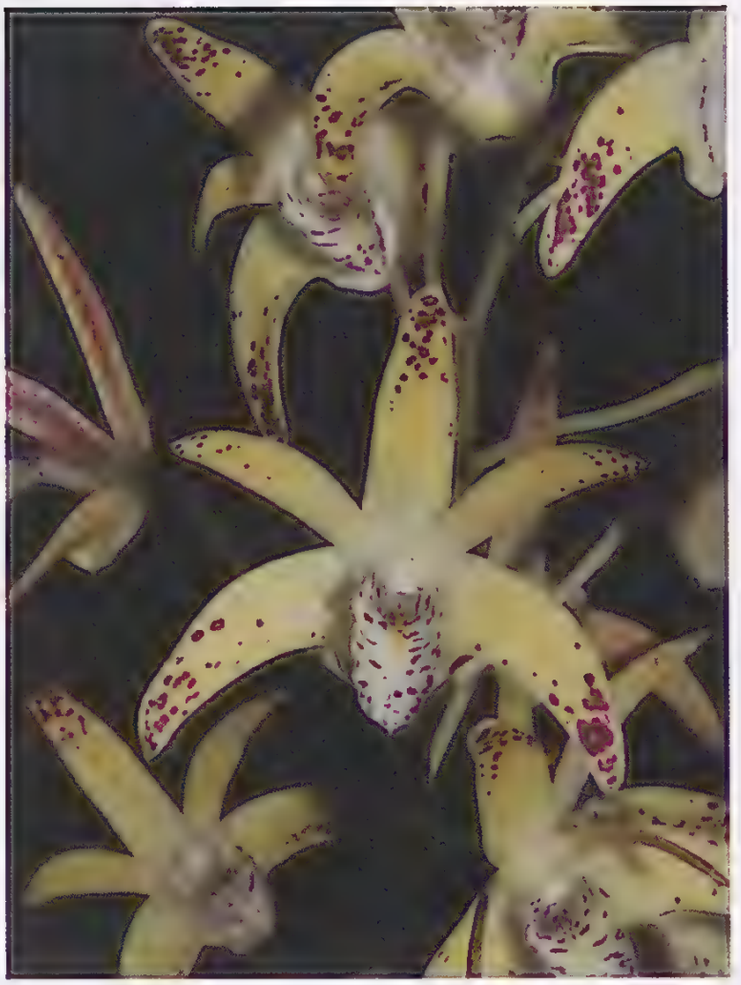
flowering, providing a centrepiece when many cool-growing *Dendrobium* hybrids from the cooler parts of Melbourne were yet to have fully open flowers.

The flowers were of moderate size with fairly narrow segments and an open shape. I consider them as in the style of *D. tetragonum*, with a wide colour range from off-white to deep yellow, and variable deep purple markings. None had the strong purple-red segment tips of the parent *D.* Inquest. The labellum was long, fairly wide, and conspicuous. Growth rates and ease of culture were similar to other hybrids in our collection without *D. bigibbum* in the parentage, and they were grown alongside. Mature size was reached in most plants by 2017–18 when a six-inch pot contained from five to nine canes with lengths of 15–30 cm, a moderate size. They are now approaching an optimum where the floral displays can be adequately rated.

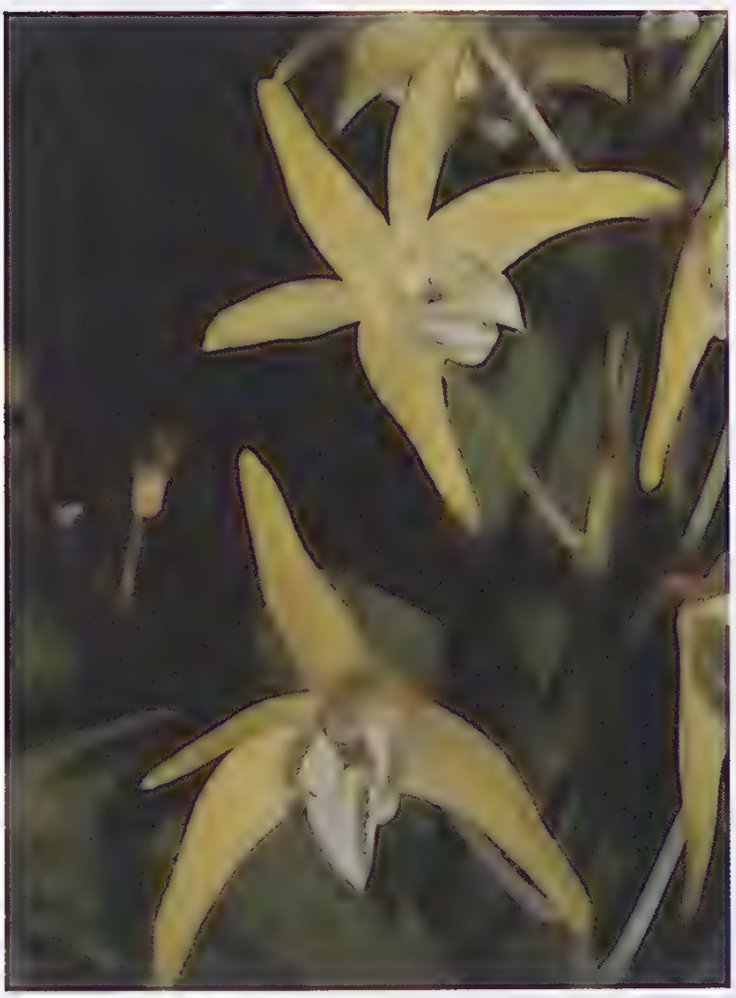
Growth was steady, with several new growths per year in 2012–19. Summers were warm to hot with extreme days over 40° C, and natural rainfall was below average. In 2020–21, the rainfall was regular

Dendrobium speciosum var. *speciosum* 'Windermere'

Dendrobium Yarra Quest 'Stardust'



Dendrobium Yarra Quest 'Stardust'



Dendrobium Yarra Quest 'Lemon Drops'

Dendrobium Yarra Quest 'Blanchlip'

throughout the growing season, much higher than in 2012–19, with cooler conditions and few days over 34° C. The number of new growths in a group of 22 mature plants with 5–9 mature leaved canes in 12–16 cm wide pots averaged only 0.95 in 2020–21, about 30% of the usual expected.

Vegetative Features in October 2020

At maturity in 12–18 cm wide pots the plant height, including racemes, was 27–56 cm, a convenient size, and the canes were 14.8–33.5 cm long (Table1). They were narrow to moderate in width (0.8–1.8 cm), with a basal narrowing (a collum) that was usually conspicuous. The leaves were robust and tending broad after *D. speciosum*, but smaller (3.2–6.1 cm wide x 10.2–17.5 cm long). The peduncles were robust (0.2–0.3 cm wide) enabling good support for arching to erect racemes with high flower counts. There were no significant vegetative differences between the seedlings from two different *D. speciosum* parents.

Floral Features and Quality at Near Mature Plant Size

The range of colours expanded as more plants flowered and there were no differences in colour range using the two different *D. speciosum* parents, although 'The Goddess' produced plain yellow and white-cream flowers more frequently. The floral characteristics are summarised for a representative sample of 15 plants (Table 1). The flowers of all plants are star-shaped in *D. tetragonum*-style, with 11 having the purple markings of *D. tetragonum* while the rest have plain colours with no markings. There are occasional plants with pale green and other pale but distinct pastel colours. The flowers are moderately large for a *Dendrocoryne* hybrid (3.6–6.0 cm wide x 3.8–7.3 cm high). The labellum is fairly wide, up to 1.1 cm, and conspicuous in length and colour.

The quality of raceme habit and flower shape is from fair to excellent, with some canes having more than one raceme and an attractive spread of racemes over the plant. The yellow colours are vibrant and the purple markings on the segments, and sometimes the labellum, are very bright and distinct. In the best examples, overall flower quality is fairly high. Several plants produced quality displays in season 2020, which was noteworthy for poor flowering in Victoria of many *Dendrobium* species and hybrids. Two of the most promising *D.* Yarra Quest seedlings are described below. Covid 19 pandemic restrictions on travel by judges prevented any consideration for ANOS awards.

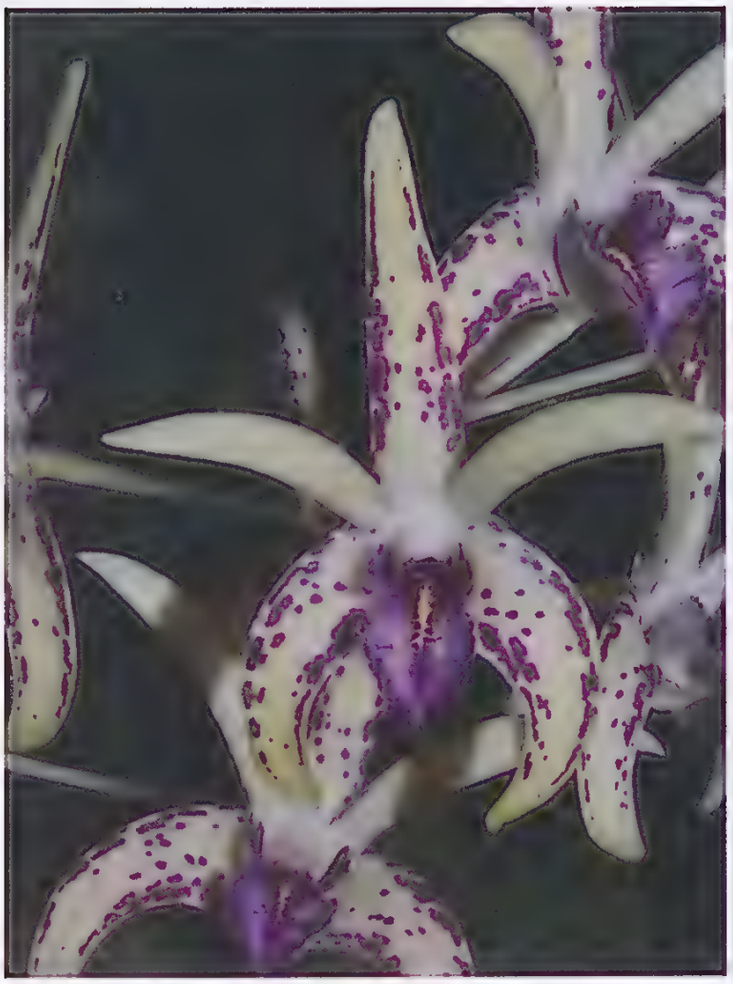
Dendrobium Yarra Quest 'Stardust' and 'Charlie'

'Stardust' is a product of *D. speciosum* 'Windermere' and flowered in August, one of the earliest *Dendrobium* hybrids to flower in the cool conditions of the outer eastern Melbourne suburbs. The canes were 30 cm high to the leaf tips in a 15 cm diameter pot and bore 1–2 racemes on every flowering-size cane. There were 11 racemes with 20 flowers on the longest raceme and a total of 159 flowers. The racemes were gently arching, distributed over the whole plant. The flowers were 4.1 cm wide and tall, presenting well. Flower colour is a vibrant lemon-yellow with a zone of very distinct bright purple markings on the outer third of the segments.

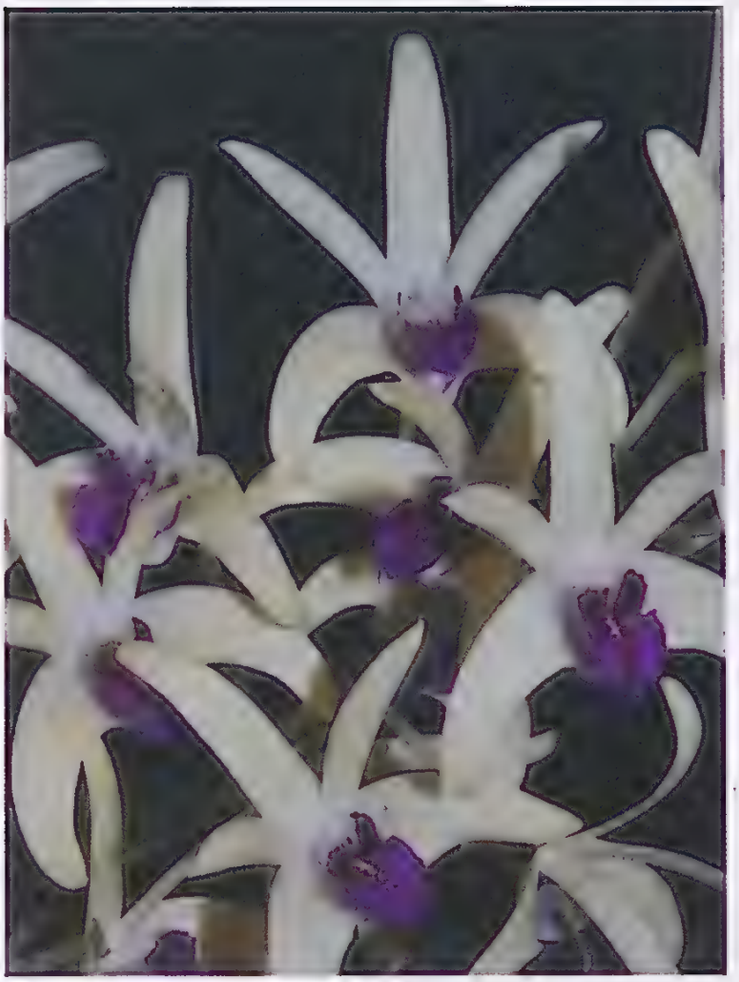
'Charlie', a seedling from *D. speciosum* 'The Goddess', flowered in October towards the end of the season for *D.* Yarra Quest. It was similar in plant size and height to 'Stardust', with six almost erect racemes bearing 14–17 flowers, and with unusual very pale pink tepals with an off-white labellum (1.05 cm wide, almost twice the width of the 'Stardust' labellum). The flowers were large (4.0 cm wide x 5.3 cm high), with a more oval outline than 'Stardust'.

Approach to Judging

There is no set of detailed guidelines for assessing different styles of *Dendrobium* hybrids and to attempt written guidelines would be a difficult task. In general, ANOS judging assesses the style of hybrid, in this case, a *D. tetragonum*–style star-shaped flower, by considering what is expected and optimal, together with benchmarks, standards and points available for colour, shape, presentation etc. Judging of this hybrid may be similar to other star-shaped flowers such as *D.* Hilda Poxon and *D.* Graham Hewitt (*D.* Ellen x *D. speciosum*), the latter having a similar species composition. When new hybrids are benched for the first time, they require reference to, or comparisons with, other hybrids, and well-considered discussion.



Dendrobium Yarra Quest 'Blanchlip'

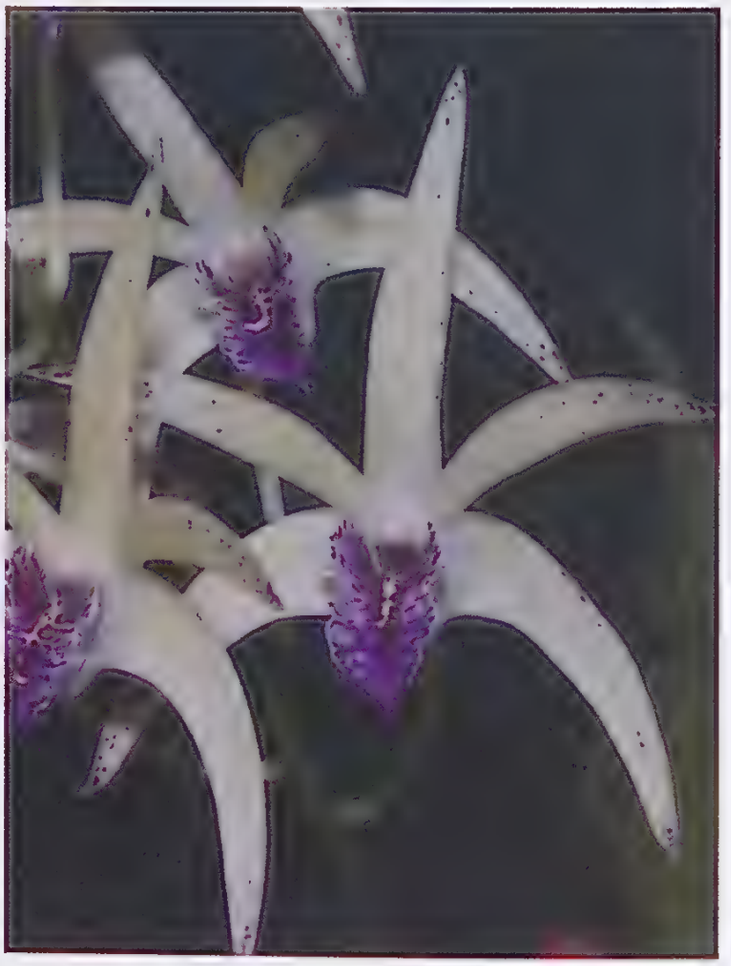


Dendrobium Yarra Quest 'Lime and Passionfruit'

Dendrobium Yarra Quest 'Frilly Lip'

Dendrobium Yarra Quest 'Lemon Giant'

Dendrobium Yarra Quest 'Heidi'



Dendrobium Yarra Quest 'Millie'

Dendrobium Yarra Quest 'Charlie'

Dendrobium Yarra Quest 'Charlie'

Comments on the Outcomes of Breeding and Influence of Species

There is satisfaction in keeping all plants of a cross, developing them and 'flowering out' the group of an experimental crossing that may or may not be successful, and where the influence of species is difficult to predict. It is a relatively slow process. In this case, it took about 15 years to fully evaluate the results in cool conditions where the growing season is only 4–5 months. The time to flowering was about average for *Dendrobium* hybrids grown in southern Victoria, but a few more seasons of flowering were required for canes to mature to full size, and for racemes to bear maximum numbers of flowers.

It is still premature to assess the quality of the best plants in a good flowering season, but some clear positives are evident. Culture in a bark pot mix is fairly easy and providing a warm site with high light and more fertilising than I have used may assist growth rate. Flowering is consistently early, well before the peak of *Dendrobium* hybrids, and extends the season by at least a month, which fits well with the timing of most shows in the region. Plant size is moderate and not dominated by *D. speciosum.* Cane length is less than that of the parent *D. speciosum* (Table 1), which under southern conditions are only of moderate length. Flower size ranges from smaller than the *D. speciosum* parents to slightly larger, which is a relatively large size considering all the background species. Flower presentation, colour range, floriferousness and quality are very attractive, especially with variable deep purple and two-tone markings. Improvement in culture is probably the main factor in getting optimal results.

Influence of Species

The influences of background species on this hybrid can now be assessed after analysing about 40 plants over nine flowering seasons. Geneticists warn that species background composition should not be regarded as a reliable predictor of characteristics of breeding outcomes. The genes responsible for characteristics of most plants are poorly known (Stuessy 2009), including those involved in crossing cool-growing dendrobiums. However, considering the progeny of crosses with various compositions of parent species allows a discussion of probable influences. The composition of *D.* Yarra Quest is *D. kingianum* 23.6%, *D. tetragonum* 12.5%, *D. speciosum* 60.8% and *D. bigibbum* 3%. *Dendrobium tetragonum* has a clear influence on flower shape, narrow segment width and colour (background colour and purple markings) as it does in *D. kingianum* hybrids at this percentage composition (Adams 2019). The influence of D. *tetragonum* is variable at this level, and not always dominant, as indicated by the variable penetration of yellow, green and the purple markings. This is a feature that breeders appreciate, as it offers variety and the chance of attractive colour combinations. The influence of *D. speciosum* on plant size, growth rate and time to flowering appears to be counter-balanced by the influence of *D. kingianum,* which limits plant size. *Dendrobium kingianum* does not appear to have much effect on the floral features of some plants, but Ros Capell (pers. comm.) notes that 'Stardust and 'Charlie' show some *D. kingianum* features in the flower shape, particularly the arc of the lateral sepals.

The influence of 3% *D. bigibbum* is perhaps the most interesting of all. The most important influence is on flowering time, which is earlier than for other *Dendrobium* hybrids, and more towards that of *D. bigibbum* hybrids. Flower longevity is about four weeks, significantly longer than for other cool-growing hybrids. There are smaller and variable effects on segment and labellar characteristics as detailed in Table 1. The labellum is relatively long and wide in some seedlings, the petals may be larger than in some comparable hybrids, and the fairly large flower size may also be a *D. bigibbum* influence. The influence of component species is fairly subtle in *D.* Yarra Quest, creating a range of progeny with attractive floral shapes and colours.

References

Adams PB 2019 Breeding cool growing *Dendrobium* (Section *Dendrocoryne*) Yarra hybrids. *The Orchadian* 19(11): 496–505.

Stuessy TF 2009 *Plant Taxonomy. The Systematic Evaluation of Comparative Data 2nd Ed.* Columbia University Press p. 297.

Zeuxine oblonga R.S.Rogers and C.T.White - The Hairy Jewel Orchid

Text Pam Porteous Photos Trevor Porteous | portefam@optusnet.com.au

Summary

Zeuxine oblonga is a rhizomatous terrestrial with a unique appearance, growing in moist shady forests from north Queensland to northern New South Wales. It has a striking white labellum which stands out from the dark stem and rainforest floor background. A first and successful attempt of culture is described. There are 12 other *Zeuxine* Lindl. species from Papua New Guinea that are also ANOS eligible.

Introduction

On a trip to North Queensland in 2015 we came across an attractive little orchid, *Zeuxine oblonga*, in flower. At first glance this may not obviously be an orchid but for those of us who love to search for orchids in the bush, there was a 'give this a second look' moment. Once we bent down to flower level it was obviously an orchid, one never seen before, always an exciting moment. Initially we saw *Z. oblonga* early in our trip in the grounds of Paronella Park at Mena Creek, south-west of Innisfail. Subsequently heading north, it was seen in other places such as Josephine Falls and The Boulders near Babinda.

Zeuxine oblonga, known as the common jewel orchid or hairy jewel orchid, is a reasonably widespread terrestrial species found in temperate to tropical areas. This species is listed by Kew on the emonocot website as accepted. It occurs in the Northern Territory, Queensland and New South Wales. There is also a reference to the species on *FloraBase*, a site produced by the Western Australian Herbarium, Biodiversity and Conservation Science, Department of Biodiversity Conservation and Attractions, which lists a further location just within the north-eastern Western Australian border.

The northern range is Cape York. Older references consider the southern limit of the range of *Z. oblonga* to be northern New South Wales, however John Roberts, a Queensland orchid grower, found specimens growing in roadside drainage areas at Broken Head, just south of Byron Bay, approximately thirty years ago (pers. comm.) and it has reportedly been sighted further south since then. Most current references put the southern range as approximately Coffs Harbour (Jones 2006).

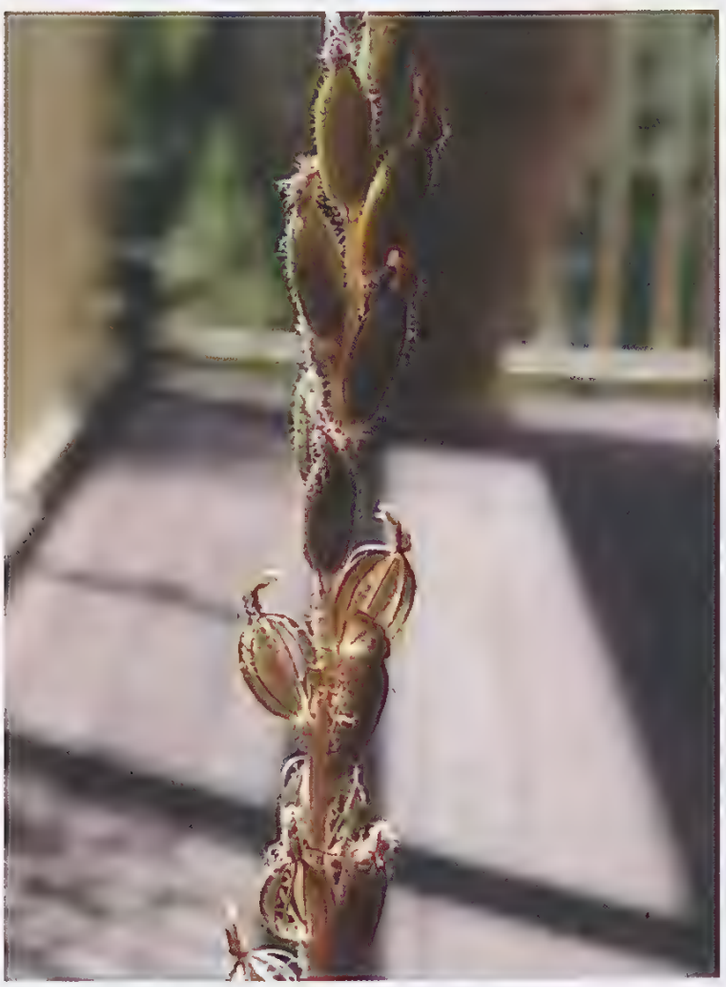
The name for the genus is derived from the Greek, *zeuxis*, meaning fusing or yoking, in reference to the flowers and the partial union or yoking between the labellum and column. *Zeuxine* is classified in the tribe *Erythrodeae*, subtribe *Goodyerinae*, the Jewel Orchids and consists of up to 70 species, distributed in tropical regions from Africa to Asia, South-east Asia, Malesia, Melanesia, Polynesia, New Caledonia and Australia. According to O'Byrne (1994) there are at least 12 Papua New Guinea species of *Zeuxine* all found below 1000 m. They are described as rather primitive in evolutionary terms, terrestrial, with fleshy creeping rhizomes that produce leafy shoots at intervals. *Zeuxine* can be recognised by the resupinate hairy flowers, saccate labellum with one to few (often 2) stalkless glands and unwinged column.

A single widespread species, *Z. oblonga* extends to mainland Australia and another species, *Z. exilis*, is endemic on Christmas Island, however it hasn't been seen since 1904 and is regarded as endangered or extinct. Dockrill (1969) accepts three sections in the genus with *Z. oblonga* belonging in section *Monochilus*, referring to leaves with a distinct broad lamina and the apical lamina of the labellum being rather large and bilobed with the arms outspread.

More recently the infrageneric treatment of *Zeuxine* in *Genera Orchidacearum*, Vol. 3 (Pridgeon 2003) follows the traditional division of the genus but with the nomenclature updated. *Zeuxine* section *Psychechilos* seems to be heterogeneous, and later

Zeuxine oblonga close-up of flowers

Zeuxine oblonga, Josephine Falls, North Queensland



Zeuxine oblonga seed capsules

Zeuxine oblonga plant showing new growth

authors may find it necessary to reinstate sections *Lathrodus* and *Monochilus*.

Description

The following is based on Dockrill (1969).

Zeuxine oblonga produces a rhizome of approximately 5 mm diameter which is prostrate, cylindrical, usually unbranched, fleshy and quite brittle. New growths appear along the rhizome, growing into loose clumps. A rosette of leaves appears and lasts until flowering when the stem elongates to 10-45cm tall with cauline leaves scattered along it, an inflorescence 5–30 cm tall with a peduncle usually longer than the rachis. The cauline leaves generally dry before those of the rosette but often those also dry at flowering time. Leaves are pale green without petioles, sheathing 3–8 x1.2–3 cm, ovate often unevenly so. The leaf margins often undulate. Plants produce up to 30 flowers which sit tightly onto the stem. Some references comment they are rather crowded however this is not so on photos we have taken. Flowers are 4–6 mm long not widely expanding except for the lamina of the labellum. Sepals are dull green while petals are a translucent white with labellum opaque white and the most striking feature of the flowers. Dorsal sepal 4–6 x 1.5–2 mm, ovate or oblong, deeply concave at the base. Lateral sepals are a little shorter than the dorsal sepal. Petals are about the same length as the dorsal sepal or slightly less but usually a little broader, suboblong, concave. The labellum is about the same length as the dorsal sepal, with the deeply saccate basal portion longer than the remainder of the labellum, the two calli about 0.5 mm long, rounded, linear or reniform, apical lamina completely divided into two upright, divaricate, equal parts, each 2 x 2 mm, square or oblong, and the apical margins often irregular. The inflorescence, bracts and sepals of the flowers are covered in hair-like structures. Flowering occurs in September to October (Bishop 1995).

The flowers of *Zeuxine oblonga* are probably insect-pollinated. The pollinarium has a distinct viscidium and the stigmas are well-developed as if for cross-pollination. It is also possible that the flowers self-pollinate but we have no evidence for that. In our experience all flowers on the raceme produce a seed capsule when growing in our hot house and this is most likely to be due to visiting insect pollinators.

Habitat

This species is a rhizomatous terrestrial that prefers moist, often shaded forest habitats. Lavarack and Gray (1985) list *Z. oblonga* as growing in tableland rainforests and wet lowland forests as a terrestrial with intermediate temperatures, low to medium light and medium to high humidity. They reported that in 1966 Len Lawler found *Z. oblonga* growing in a swamp area along with *Phaius tankervilleae*, a *Spathoglottis* species and *Malaxis latifolia*, obviously in damp conditions.

At Paronella Park, 100 km south of Cairns, North Queensland, pathways edged with rocks have been put in for access, creating garden beds of large areas joining onto natural bush. It was clear much planting had occurred in the past but local plants have re-established over time. The area is quite heavily shaded by a tall canopy from well-established trees and light was filtered and not bright. Plants such as ferns and mosses and young seedlings of palms and other trees were growing nearby. All areas of the beds were covered by leaf litter. Plants of *Z. oblonga* were growing in the beds rising up from the leaf litter. The area is usually quite damp. The predominantly concrete structures of Paronella Park show the signs of having aged in a wet environment and it was common to see ferns and other plants growing in cracks and crevasses of the concrete walls and fences.

Plants of *Z. oblonga* at Josephine Falls, North Queensland were seen growing along the side of the walking track. The leaf litter on the ground was quite thick and on inspection the rhizomes of the plants were growing up through the leaf litter with the roots mostly in this decaying litter strata. This area was shaded by rainforest canopy but more open than that of Paronella Park. Plants here were taller and some had longer inflorescences than those previously seen.

Culture

Lavarack and Gray (1985) suggest pot culture for growing *Z. oblonga* with it being kept moist in summer and needing a slightly drier period in winter when it is drier in northern states. Cultivation

Zeuxine oblonga in flower September 2020

for Papua New Guinea species can be in large pots of open, well-drained humus rich soil with regular additions of leaf-mould to the surface being beneficial (O'Byrne, 1994). Plants need shade and constant humidity. Direct sun, drying winds and drying out should be avoided. Propagation easily occurs by placing sections of old rhizome on moist sand or potting mix which needs to remain moist.

We grow our plant of *Z. oblonga* in the hot house which is covered in white solid plastic film that gives 50 – 60% light transmission but is shaded by nearby trees for parts of the day, especially in winter. In summer temperatures can be quite hot reaching high 40s C on extreme days. We heat at night in winter with the aim to keep the temperature at 10° C or above. We grow our plant of *Z. oblonga* just above floor level and close to a misting fan which sprays out water four times a day in warmer weather. The plant doesn't get wet by the misting fan, but the area around remains damp and humid. In summer we water every third day on average while in winter watering may be as infrequent as once a week. We carry out a generic fertilising program with *Z. oblonga* receiving the same fertiliser as the rest of the orchid collection.

We initially grew our plant in a close bark-based potting mix. The first year it grew quite well and flowered but on finishing flowering the growths died back and it appeared to be doing poorly, in that new growths on the rhizome died back, so it was potted into *Sphagnum* moss. It responded well to this new medium, so we have continued to grow it this way. The plant has flowered several times, each time producing a stronger and bigger inflorescence. Our plant flowers with a much taller inflorescence and more flowers than any we saw growing naturally. This presumably is due to the additional light and nutrients available.Last year the plant produced three inflorescences which were 60 cm tall, measuring from the base of the pot. Once the flowers have been pollinated and seed pods ripen, the inflorescence begins to lean sideways, drooping possibly to allow for seed dispersal away from the parent plant. At the end of flowering, we find it best to reposition the rhizome to improve its contact with the potting media as this appears to encourage new growth. The plant goes into a dormant stage for a short while before producing new leaves.

Zeuxine oblonga is an unusual species with its hairy appearance, upright presentation and white labellum. It was a pleasure to see in flower a plant that was unknown to us and be able to discover more about it. There are at least twelve other species of *Zeuxine* that are ANOS eligible and while acquiring some of these species is probably not possible, finding out more about them will be an interesting project.

References

Lavarack PS & Gray B 1985 *Tropical Orchids of Australia*. Thomas Nelson. Melbourne.

Bishop A 1995 *Orchids of New South Wales and Victoria*. University of New South Wales Press.

Dockrill AW 1969 *Australian Indigenous Plants*. Halstead Press. Sydney.

O'Byrne P 1994 *Lowland Orchids of Papua New Guinea*. Singapore National Printers. Singapore.

Jones DL 2006 *A Complete Guide to Native Orchids of Australia*. Reed New Holland. Sydney.

Pridgeon, A.M., Cribb, P.J., Chase, M.W. and Rasmussen, F.N. (eds) 2003 *Genera Orchidacearum Vol. 3*. Oxford University Press.

www.emonocot.org *Plants of the World Online* Kew Science

www.orchidspecies.com *Internet Orchid Species Photo Encyclopedia*

www.florabase.dpaw.wa.gov.au Western Australian Herbarium, Biodiversity and Conservation Science, Department of Biodiversity Conservation and Attractions

http://www.canbr.gov.au *Australian Tropical Rainforest Orchids*

Pam Porteous is an ANOS and AOC judge in Queensland who writes regularly on Australian orchids.

Zeuxine oblonga flower. Kondalilla National Park.

The Wasp and the Orchid
The remarkable life of Australian Naturalist Edith Coleman

Written by award-winning author Danielle Clode. ***SHORTLISTED FOR THE NATIONAL BIOGRAPHY AWARD 2019***

This is the previously unwritten story of naturalist Edith Coleman who lived in Blackburn, Victoria, who was the first person to identify and describe, in 1927, the pollination of an orchid by pseudocopulation after careful observations of the tongue orchid *Cryptostylis leptochila*. Edith was awarded the Australian Natural History Medallion in 1949, the first woman to receive this honour

Hardcover 420 pages RRP $39.99, our price $35.00 plus postage

Visa/Mastercard accepted

Australian Orchid Foundation

P. O. Box 440
Yarra Glen Vic. 3775

Phone (03) 9730 1995

australianorchidfoundation.org.au

Weather and Orchid Culture in 2020–21

Text by Sheryl Lawson | sheryldlawson@gmail.com

Summary

The 2020–21 growing season in southern Victoria was significantly cooler and wetter than in recent years, requiring some changes in usual cultural practices. Compots and seedlings of cool growing *Dendrobium* species and hybrids and all *Aeridinae* (mainly *Sarcochilus*) produced a noticeable increase in new growth, leading to the rapid development of plants. *Dendrobium speciosum,* hybrids where it is dominant, and hybrids with a component of *Dendrobium bigibbum* had a decrease in growth compared with previous years. Cultural success depends on many factors, including weather, the type of collection grown, and day to day decisions about managing the collection during the growing season. Over time, plant growth responses inform whether decisions have been correct, and regular observations of plant health above and below (i.e., condition of the roots) the potting mix can lead to the best cultural adjustments.

Introduction

Many factors contribute to successful orchid growing. If you are fortunate enough to live in an area where Australian epiphytic orchids occur naturally, you already have an advantage. If you do not, what are the factors that determine your success? Weather plays a critical role in the success of orchid culture as well as the active role we play in creating the right microclimate for orchids to flourish in our collections. In this article, I explore these issues, including the role of weather and the effects of the La Nina summer weather pattern and the results that I have observed in my orchid collection and comments from growers elsewhere.

The Role of Weather

Looking at the wave of new growths on orchids in my growing houses, I have concluded it has been a great summer for culture for some of my cool-growing dendrobiums and my *Aeridinae*. It is the best year I can remember in 40 years of being an orchid grower, and I think I understand some of the reasons why. The main one has to do with the weather.

Weather strictly refers to atmospheric conditions over relatively short periods, from minute to minute to seasonal changes, while climate refers to how the atmosphere behaves over relatively long periods – years and longer. That is, climate is the average of weather over time. The measurable factors include air pressure, humidity, rain, hours of sunshine, cloudiness and wind.

In Australia, we have been in a La Nina cycle this summer, the last cycle being 2010–12 when Australia overall experienced the wettest period on record. During La Nina, the temperature of the seawater in northern Australia increases, and so does convection. This typically leads to increased rainfall across much of Australia, with cooler daytime temperatures south of the tropics and warmer overnight temperatures in the north (Australian Bureau of Meteorology).

In my orchid houses in the Dandenong Ranges foothills near Melbourne, this summer has delivered a significant number of cooler days than usual with cloud and higher humidity, as well as regular rainfall. There have been less than usual days of high heat and low humidity, which are a feature of Melbourne summers. This is my impression.

The Australian Bureau of Meteorology (bom.gov.au) website is a useful resource. My orchids are grown at Mt. Evelyn, which is at 37.78ºS and 145.39ºE. The closest weather station recording rainfall is 3 km away. BOM records from 1918 indicate that the mean annual rainfall is 1026.9 mm. Recent rainfall statistics are found in Table 1.

My nearest weather station for temperature is 5 km away, and the minimum and maximum temperatures there are often 1-2 degrees more extreme than my

Month	Total Rainfall (mm)	Historical Monthly Rainfall Mean (mm)
November 2020	69.6	93.6
December 2020	78.4	80.7
January 2021	110.0	59.8
February 2021	incomplete	60.1

Table 1. BOM rainfall data for the closest weather station to Mt Evelyn (3km).

Month	Mean Maximum Temperature (°C)	Historical Mean Maximum Temperature (°C)
November 2020	24.9	22.8
December 2020	24.3	25.3
January 2021	26.8	28.0
February 2021	incomplete	27.8

Table 2. BOM mean maximum temperature data for closest weather station to Mt Evelyn (5km).

property. Mean maximum temperatures recorded there for this season are fund in Table 2.

The data confirms my impressions that the weather has been wetter in January and cooler in December and January, which means more cloud and humidity for my orchid collection, all grown undercover. There have been seven days over 30° C in January and four days in February (up to 17th Feb). There have been no days over 40° C so far.

In summer, I struggle to maintain adequate humidity on hot days with searing dry heat, and orchids are not generally well-adapted to these conditions. Subsequently, they struggle to thrive, and many stop growing during periods of intense heat and dry. The collection is in large polyhouses, I do not water heavily, and plants do not generally get individual attention. Nearly all plants are grown in pots for this reason, as it helps to keep the root systems moist and protected.

The last few seasons have been poor for orchid growth and flowering in my orchid houses. The reasons for this are complex and include the relatively high frequency of scorching days, often with several in a row of over 40° C. As I have not changed my culture, I consider the weather is a significant factor in the changes in growth observed this season.

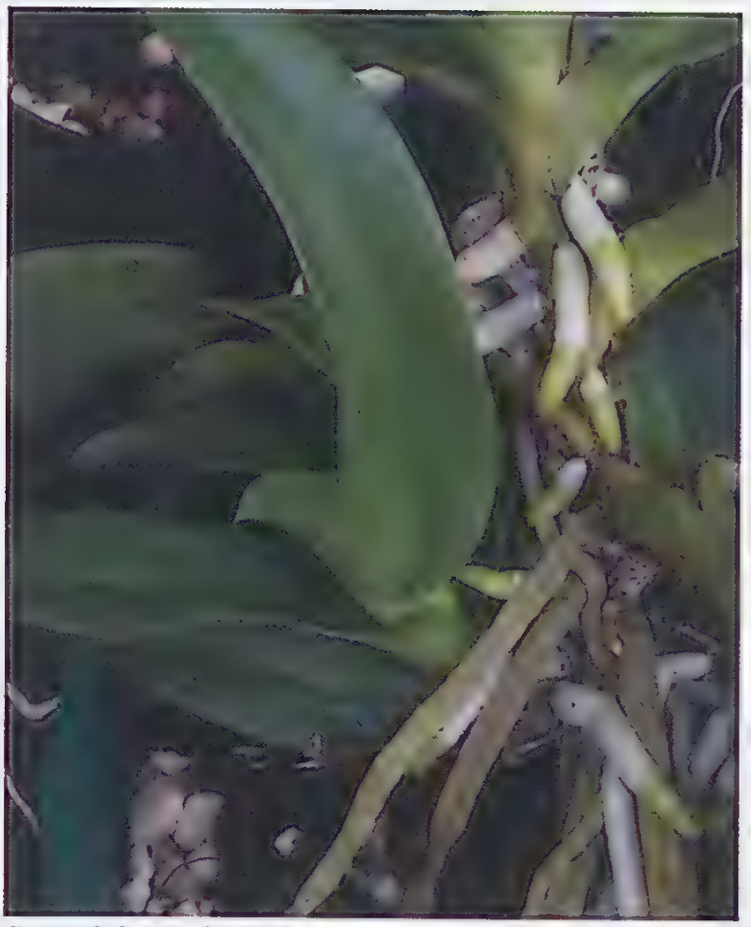
What Other Factors are Important for Good Culture?

The natural distribution of epiphytes is small and localised in Victoria. *Sarcochilus australis* has a patchy occurrence in Victoria in cool temperate rainforest areas of Gippsland in the east, the ranges north of Melbourne, where it is now uncommon after bushfire destruction of habitat, and in the Otway ranges to the west. *Sarcochilus falcatus* and *Plectorrhiza tridentata*, as well as *D. striolatum* and *D. speciosum*, occur in East Gippsland, where the climate is milder due to the Eastern Australian Current sweeping warm water down the eastern seaboard. Still, it does not influence much of the rest of Victoria. In other areas, including Melbourne, growers have to work harder to create a suitable environment. Additionally, it helps to live near the sea where temperatures are slightly milder and humidity higher.

Further, cultural success depends on the plants chosen to grow, so choose with your head rather than your heart, or there may be heartbreak. There is a challenge in growing really difficult things, but regular success requires plants that suit the fluctuating conditions of the natural environment of the particular species. In the cool foothills of the Dandenongs, that means choosing cool-growing *Dendrobium* species and hybrids and cool-growing

Plant Growth in summer 2020-21 near Melbourne, Victoria Photos by P. Adams

Compot of cool-growing *Dendrobium* seedlings ready for separating into individual pots

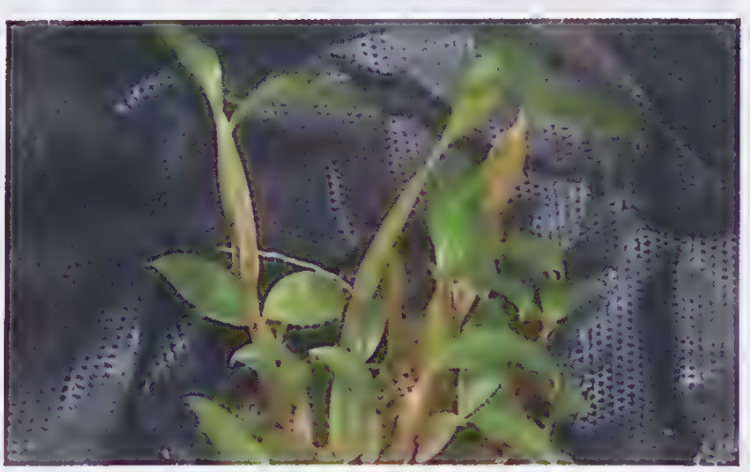


Sarcochilus Judith seedlings showing healthy leaves and roots

Advanced compot of cool-growing *Dendrobium* seedlings

Multiple new growths on *Dendrobium kingianum* seedlings

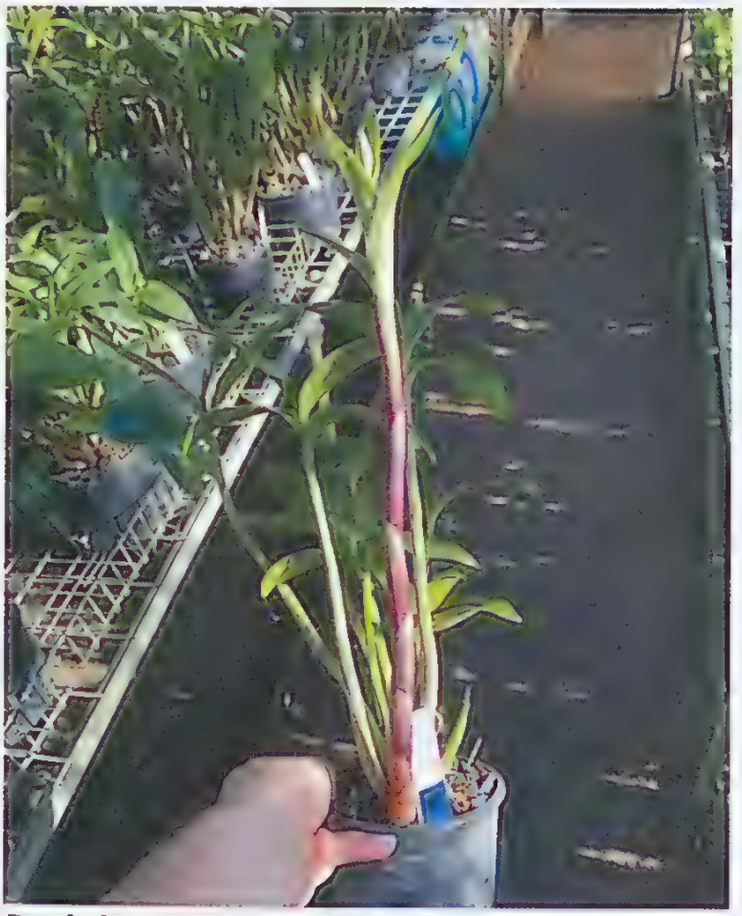
Rotting of new growth on *Dendrobium* Jesmond Gem secondary to water accumulating



Dendrobium tetragonum seedlings with new growths

Plant Growth Summer 2020-21 Newcastle, New South Wales Photos by C. Farrell

Dendrobium Binh Ba (a hot/cold hybrid) showing healthy strong new growth December 2020



Dendrobium Hunter Cracker (a hot/cold hybrid) with strong new growth December 2020

Dendrobium speciosum (intervarietal) with large new growth November 2020

Mature dendrobiums in shadehouse January 2021

Dendrobium Hunter Sparkle (a cool-growing hybrid) showing growth response January 2021

Near-flowering dendrobiums and a collection of *Dendrobium striolatum* in shadehouse January 2021.

Aeridinae. Having adequate sunlight is important for dendrobiums, while *Sarcochilus* appreciate lower light levels in general. The polyhouses run east-west in orientation and receive good sun until mid-afternoon when the sun drops below the bushland areas on the southside of the orchid houses. Aeridinae thrive in the most southerly house where average light levels are lower. Large overhead fans run intermittently throughout the day to provide gentle air movement, with automatic misting for really hot days.

Also, more recently, I have chosen plants with less *D. speciosum* in their background for earlier flowering from flask. Crosses that go back to early hybrids and species are generally more vigorous.

Monitoring of Cultural Success

The ultimate goal for most growers is to have healthy, actively growing plants that produce plentiful flowers. Many growers also appreciate the form and appearance of plants when they are in the active growth phase, with bright green and red leaf colourations and attractive architecture.

In my collection, the most sensitive litmus test of growing conditions in the summer is the behaviour of deflasked seedlings and mature Aeridinae species and hybrids, as these groups have little water storage capacity, unlike established Australian dendrobiums. Therefore, they will respond quickly to adverse growing conditions, with leaf shrinkage, fungal diseases and pest infestations. Unfortunately, sudden death can also occur without warning. Regular monitoring will give an idea of the suitability of the growing conditions, and checking the health of the root systems regularly, including tipping a plant out of a pot for root inspection, is also recommended.

Adjusting Culture Depending on Weather

Orchid growing is chancy if there is an attitude of 'set and forget' with automation. Variation in watering, humidity and air movement is required not only from season to season but in Melbourne from day to day (we are known as the city with four seasons in one day) to obtain optimum results. For example, choosing to water the night before a really hot and dry day is helpful, and misting under benches during that day will help protect plants from high stress. Withholding watering for long periods during particularly cold and still winter periods is also essential and requires a steely determination not to water, sometimes for weeks at a time, to lower the risk of fungal infections and loss of roots and bulbs. In other states and areas, the approach will be very different.

In the cooler southerly conditions of outer Melbourne, *Dendrobium* orchids have a shorter growing period from November to April and plants flower later in the season, mainly October to November. *Sarcochilus* grow throughout the year and faster in the cooler months.

Growth Responses in the 2020-2021 Season

This growing season I deflasked *Dendrobium* seedlings into compots in December, and plants were developing strongly enough to put them into individual pots within two months, with excellent root growth and plump small bulbs. The seedlings were line-bred *D. kingianum* as well as advanced hybrid dendrobiums. Seedling *Sarcochilus* hybrids have behaved in the same way, and some *S. australis* hybrids deflasked six weeks ago look promising for flowering soon. That is a better than average growth response. *Sarcochilus* species and hybrids are starting to put out strong new growths and have healthy root tips. The larger dendrobiums are putting up multiple new healthy shoots. I have not had a red spider outbreak this summer, which is more likely when conditions in the orchid house are too dry.

Mature *Dendrobium speciosum* plants have produced very few new growths, with many producing none by early March 2021, a striking difference from recent years. Interestingly the hybrids with higher background percentages of *D. speciosum* have also performed below average this year with regard to the number of new growths (none in some cases), including over half of the plants that were divided last season and the small plants in 4-inch pots have also shown less than average rate of growth. The hybrids with 3-12% *D. bigibbum* (hot/cold hybrids) have much-reduced growth with an estimated 30% of the usual growth rate in the polyhouses, with slightly better performance in a separate smaller unheated polyhouse that has warmer conditions. In contrast, other cool-growing *Dendrobium* hybrids are above average for new growths, and as mentioned

compots of deflasked seedlings are doing very well. *Sarcochilus* and other Aeridinae are also extending their growths.

Despite the higher humidity, there has not been a major problem with new growths damping-off, at least not more than usual. However, I am keeping an eye on the frequency of watering, as when the weather is extremely hot, watering daily in the evenings is indicated combined with daytime misting. Still, with the cooler summer weather, I have slowed watering frequency right down to twice a week and will drop back even further soon.

Whether the current growing success leads to improved flowering in the next two years is yet to be determined. Still, the establishment of healthy roots and lots of new growths is a very positive indicator for cool growing dendrobiums and *Aeridinae*.

Report from Callyn Farrell, Newcastle, New South Wales

This growing season has been perfect for most sections of *Dendrobium*. The cooler temperatures have allowed growths to develop at a steady and more consistent rate. Further, because we have had to water less throughout the growing period, less water has been held within the sheaths of new growths. Subsequently, less dampening-off and fungal infections have occurred. In contrast, for *Dendrobium* section *Rhizobium*, the high temperatures contrasted with heavy rainfall days throughout November and early December 2020 combined, increasing fungal issues and "crown burn" (growths central to the plant base are burnt or suffer fungal infection and later drop off).

The deflasking for 2021 was completed two months earlier than usual. This is positive regarding both saving time and hardening off seedlings before temperatures begin to lower in April. I am interested to see if this has any impact on the speed and size of growths. Red spider infestation has not been an issue this season, saving both seedlings and time.

With an increase in rainfall and humidity, I was increasingly fearful of root-based fungal infections. We grow under shade cloth only (no solid covering). Therefore, we engaged in an increased fungicide program, both in intensity and breadth.

One pest that has increased in prevalence this growing season is scale insects. We have been treating them with both natural and synthetic products. Neem-based products seem to be yielding positive results. This appears to be a common experience for growers in the Lower Hunter Region, and I believe that seasonal weather may be influencing the occurrence of scale insects.

This has been a very productive and positive growing season with lots of good growths. I am eager to see what impact this will have on the quality of flowering seasons ahead.

Acknowledgements

Thanks to Callyn Farrell of DUNO and Elemore Orchids for his contribution to this article.

Sheryl Lawson is a grower and breeder of cool-growing Australian dendrobiums and Aeridinae, *and an ANOS and AOC judge.*

Orchids Australia

OFFICIAL PUBLICATION OF THE AUSTRALIAN ORCHID COUNCIL

92 Pages

Eye-catching Color

Subscription Rates (six copies)
Australia: $55.00 pa
New Zealand & Asia Pacific: $58
Rest of World: $70

Check out our home page on the internet
http://www.orchidsaustralia.com

Orchids Australia
PO Box 2945, MOUNT GAMBIER
SA 5290 Australia
thea.shaughnessy@bigpond.com

MasterCard (Advise Card Name, Number and expiry date) VISA

The Use of Fire and Slashing to Manage Permanent-swamp Populations of *Thelymitra circumsepta* Fitzg.

Text by Leo R Davis | leordavis@adam.com.au and Richard JP Davies | daviesrj@adam.com.au
Photos by Leo R Davis

Abstract

While more common interstate, the orchid *Thelymitra circumsepta* is endangered in South Australia where it is only known from one location. This location, a hanging peat swamp near Mt Lofty, was burned in the Ash Wednesday bushfire of 1983, but after this had not been burnt for 35 years, resulting in the swamp becoming overgrown by *Gleichenia microphylla*. Associated with this was a significant decline in *T. circumsepta*, only 14 plants being observed in the swamp in 2016 and fewer in the previous two years. With the aim of regenerating the orchid, approximately half of the population was control-burned in October 2017 with the remaining eight plants being protected by a slashed 3 m wide firebreak. Annual monitoring since the October 2017 burn has found a continual decline in population numbers in the unburned area, with no plants being found in 2020. In contrast, the numbers of plants in the burned area increased from eight plants pre-burn to a maximum of 25 plants in 2018, followed by a slight decline to 23 plants by 2020. Slightly more effective in promoting regenerating in the orchid was slashing, with 45 plants emerging in the slashed firebreak after only one year, in an area where none had been observed for at least three years. Twenty-eight plants appeared in the firebreak in 2020.

Background

Thelymitra circumsepta, the naked sun-orchid (Figure 1), is locally common in the eastern states and New Zealand but is listed as an endangered species in South Australia (*National Parks & Wildlife Act 1972*). Recent molecular phylogenetic studies place it in the *T. aristata* clade (Nauheimer et al. 2018). Its close South Australian relatives are *T. aristata, T. epipactoides* and *T. grandiflora* (Nauheimer et al. 2018). In South Australia with lower rainfall, it grows only in peaty bogs, but in the eastern states in high rainfall locations, it extends into well-drained loams (Jones 2006). The only known current South Australian occurrence is in a hanging peat swamp (Figure 2), near the summit of Mt Lofty. At this site plants have been observed to 795 mm high, with leaves up to 485 long and with up to 12 flowers per spike. Jones (2006) reports heights up to 700 mm and leaf length to 300 mm for this species. Individual flowers are up to 22 x 20 mm, with most less than 20 x 20 mm. Most seem to self-pollinate.

Following the Ash Wednesday bushfire of 16 February 1983, the swamp habitat became overgrown with *Gleichenia microphylla* (scrambling coral fern). In 2008, members of the Native Orchid Society of SA (NOSSA) relocated plants of *T. circumsepta* to more suitable locations, in the swamp (Bates 2011). Author Leo Davis assisted by Ed Lowrey and Helen McKerral has monitored threatened orchid species and collected data at nine sites across the Adelaide Hills, the first beginning in 2011 (Davis 2019; 2020). Including in this monitoring was *T. circumsepta*, which he commenced monitoring in 2014 but that had previously been monitored by others from 2008.

Methods

In 2016, Rick Davies (then Threatened Flora Ecologist, Department for Environment and Water, DEW) proposed an ecological burn of the swamp with the aim of reducing competition from coral fern and thus enabling the regeneration *T. circumsepta* and several other threatened plant species in the swamp. A pre-fire ramble survey was undertaken to document all plant species present in the swamp and surrounding area, in particular significant species

that might be affected by the burn.

The burn was initially planned for April 2017 but was postponed until spring 2017 due to a late grape harvest leading to concern amongst nearby winemakers over possible smoke taint. Based on advice from Paul Collier, who has undertaken burns in areas containing *T. circumsepta* in Tasmania, it was decided that the species would benefit from the spring burn and still flower in the same season, as long as the burn was before November when flower buds begin developing. It was determined based on other evidence that an October burn would similarly not a have significant impact on the other three significant orchid species previously recorded in the vicinity of the intended burn area.

A 3 m wide firebreak was slashed by the Fire Management Unit of DEW in early 2017 around the area containing approximately half of the population of 13 plants. This enabled seven flowering plants to be left unburnt as a control and as a precaution should the burn prove to be detrimental to the species. An unplanned bonus was that the slashed area became a second experiment for comparison with the control. The protected area that was not burned was small (about 35 x 25 m) (Figure 4) relative to the rest of the swamp, all of which was to be burned. Permanent photo points were set up to enable the monitoring of longer-term changes in vegetation structure.

Subsequently, the site was burned on 18 October 2017 by the Fire Management Unit of DEW as part of a larger prescription burn aimed at protecting life and property at a nearby tourist attraction. This burn had been stalled due to the environmental sensitivity of the swamp. The involvement of Davies as Threatened Flora Ecologist had enabled the burn to proceed and be a win-win situation for the swamp and public safety.

All found *T. circumsepta* plants were monitored every year, being permanently marked with numbered pins and GPS located. This enabled an annual census of numbers of vegetative and flowering plants, and numbers producing fertile seed pods. This monitoring, undertaken by Davis and associates, commenced in 2014. From 2016 to 2018, the site was visited three to five times per year to enable newly emerging plants to be caged before being browsed by kangaroos. However, due to concerns from DEW about orchids being damaged by trampling, survey frequency was subsequently reduced to one visit per year. This may have resulted in plant numbers subsequently being underestimated since new orchids might have been overlooked at bud stage or removed by browsing before they were recorded. All known *T. circumsepta* plants were caged.

Results

In the years leading up to the burn, the numbers of plants in the whole swamp remained low, varying from 14 in 2016; ten in 2008 and 2014; and eight, six, four and one plant(s) in 2009, 2012, 2015 and 2014, respectively (Table 1). One year after the October 2017 burn, all but one of the eight plants found pre-burn re-emerged. However, unlike 2016 when all plants flowered, none flowered in 2018 (Table 1). In 2020, no plants appeared in the non-burned area. In contrast, the numbers of plants in the burnt area increased from eight plants pre-burn to 25 plants in 2018 and 23 plants in 2020. While only 48% of these plants flowered in 2018, this increased to 88% by 2020 (Table 1).

Slightly more effective in promoting regeneration was slashing. Forty-five plants emerged in the slashed firebreak only one year after slashing, in an area where none had been observed in the previous three years. Twenty-eight plants remained in the firebreak in 2020. While flowering rates were initially very low (2% in 2018), by 2020 53% of plants flowered (Table 1).

Discussion

Due to its permanent swamp habitat, we found the Mt Lofty population of *T. circumsepta* to have above-ground shoots all year round. It also provides these shoots with some degree of protection during fires. Only a couple of months after the October 2017 burn, seven plants emerged in the burn area, of which four flowered. This was little changed from the five flowering plants and one vegetative plant recorded the year before the fire. This was despite the fire at this spot, which passed directly over the plants, being seemingly more intense than at the edges of the burn. The water trickling down the slope had apparently offered some protection. The day after the fire, green bases were observed on two burned leaves. One flowering plant was found in the slashed area.

The permanently wet conditions may also have enabled the species to respond rapidly to slashing. In 2018, only a year after slashing, a flowering plant and 44 vegetative plants emerged in the slashed area. The rapid response suggests that these have come up from dormant tubers. It is also possible that at least some plants were present previous to slashing as above-ground shoots and had not been seen. The greater ease of locating plants in slashed vegetation could have been a factor here, as well as an improving skill in recognising non-flowering leaves that comes with practice.

In 2020 no plants were found in the unburned control

		2014	2015	2016	2017	2018	2019	2020
NON-BURNED AREA (Control)	Flowers	1	0	8	6	0	1	0
	Leaves	0	0	0	1	7	0	0
	TOTAL	0	0	8	7	7	1	0
BURNED AREA	Flowers	0	3	5	4	12	18	22
	Leaves	0	1	1	3	13	1	1
	TOTAL	0	4	6	7	25	19	23
SLASHED AREA	Flowers	0	0	0	1	1	16	24
	Leaves	0	0	0	0	44	3	4
	TOTAL	0	0	0	1	45	19	28
WHOLE SITE	Flowers	1	3	13	11	13	35	46
	Leaves	0	1	1	4	64	4	5
	TOTAL	1	4	14	15	77	39	51

Table 1: Flowering plants and leaves of *Thelymitra circumsepta* in Mt Lofty Swamp; heavy line indicates fire.

Single flower of *Thelymitra circumsepta*, Cleland Conservation Park 2016. Note the oddity, occasionally seen at this site, of a third tufted lateral lobe

Swamp pre-burn April 2017

Jury and McKerral installing cages in the slashed area post fire (22 Oct. 2018). The steep slope and muddy conditions made it difficult to secure cages

Post-burn, with green non-burned area in mid foreground (20 Oct. 2017)

Lower western section of slashed firebreak, pre-burn (April 2017)

area. In the burned area, 22 flowering plants and one leaf were found but none of these was in the area above, to the east and the southeast of the control area. In previous years this had been a mini 'hot spot' with about 10 cages. These cages were choked with native regrowth, so it is possible that the orchids were outcompeted or that leaves were hard to find. Instead, all plants found in the burned area were to the southwest and west of the unburned control area and in the slashed firebreak areas. Before the burn, this new 'hot spot' was under much deeper and impenetrable vegetation (largely *Gahnia sieberiana,* red fruit cutting grass), which can be seen in the foreground of Figure 2) than the area with the cages. No plants could be found in the rest of the swamp, an area many times larger than the area where it was found. This is likely due to it being still covered in dense dead, but unburned, fern.

More than half of the slashed area, above and to the north of the control plot, was free of orchids. The presence of the orchid in some areas and absence in other areas of apparently suitable habitat is likely due to a combination of where flowering plants were growing before the slashing, providing a source of seed, wind current and other factors. It is likely that plants already existed, perhaps as leaves only, maybe as flowering plants, in this previously densely vegetated area, below the control plot, but were impossible to locate in earlier years.

The burning in the spring, when the fern contained more moisture, may have contributed to a partial failure of the burn over much of the upper reaches of the swamp, where *T. circumsepta* originally occurred. In the larger area of the swamp, the fern was scorched and killed but did not burn. To this day, much of the swamp is covered with a dense layer, greater than 50 cm deep, of dead fern that prevents light penetration to the ground (see the dead, grey, but unburned fern in the top left corner of Figure 3). While the burn was effective over the area where *T. circumsepta* was known to occur at the time of the fire, that was only a small fraction of the total swamp.

All plants, flowering or only leaves, detected in the non-burned control area, both before and after the

burning, were found only along narrow tracks, about 30-50 cm wide at the base and sloping steeply up to a height of about 1.5 m and width a little over 1 m, winding through the deep fern. It is presumed they were created and kept open by kangaroos, but it is possible larger feral mammals such as deer may be involved. Since the fire, casual observations suggest that these narrow paths are closing. It could be that with most of the swamp being more open, especially immediately after burning, that there was less need for animals to use these tracks and so the paths were not being kept as open. Certainly, the observation that cages along them were no longer being knocked over suggests less traffic. This may be a factor in the collapse of the number of detected plants in the unburnt area.

Concluding Comments

For *T. circumsepta* at this site, lack of disturbance leads to domination by native ferns and shrubs and a subsequent drastic collapse, to zero, of numbers of orchid plants. Both slashing and burning rapidly increase population numbers. Slashing may be marginally more effective than burning given that the slashed area was much smaller than the burned area yet produced more plants. Conversely, burning resulting and more rapid response in terms of increased flowering. Slashing is more labour intensive than burning, thus can only be used for this and other species, where they are confined to small areas. Slashing has the benefit that it can be done in any season and is not dependent upon the normally prescribed burn timetable. There is insufficient data to determine the best seasons for such a fire for burning at this site.

References

Bates RJ (2011). South Australian Native Orchids. DVD issued by the Sub-Editing Committee (NOSSA) on behalf of the Native Orchid Society of South Australia Incorporated.

Davis, LR. (2019) Notes on *Caladenia behrii* at Belair National Park. The South Australian Naturalist 93(2): 111-116.

Davis, LR. (2020) Lifespan, flowering record and reproductive success of *Caladenia behriii* Schltdl. in Belair National Park, South Australia. *The Orchadian* **20**(2): 14-19.

Jones DL (2006). A Complete Guide to Native Orchids of Australia including the Island Territories. New Holland Publishers (Australia), Sydney.

Nauheimer L, Schley RJ, Clements MA, Micheneaua C, Nargar K (2018). Australasian orchid biogeography at continental scale: Molecular phylogenetic insights from the Sun Orchids (*Thelymitra*, Orchidaceae). *Molecular Phylogenetics and Evolution* 127, 304–319.

VicFlora (2014) https://vicflora.rbg.vic.gov.au, last accessed 28 Dec. 2020.

Leo Davis taught biology, physics and psychology to Year 12 and is an active member of the Native Orchid Society of South Australia.

Dr Rick Davies is currently a Research Fellow at the University of New South Wales supervising a PhD project studying the impact of the season of burn on orchid survival.

ORCHIDACEOUS SUPPLIES

For all your orchid accessories –

Kiwi Orchid Bark, RCRA Orchid Char, Perlite, Cork, growing media, Pots, clips, labels, & lots, lots more.

Contact us

Grahame & Margaret Muller
P O Box 4192, TINANA, Qld, 4650
Phone 0408 076 511

supplies@orchidaceoussupplies.com.au
www.orchidaceoussupplies.com.au

Looking for a book -

ORCHIDACEOUS BOOKS

For new, pre-owned orchid books & magazines
www.orchidaceousbooks.com.au

For all your orchid books & supplies

Healthy Roots Make Happy Plants

Text and photographs David Butler | david.greenvista@gmail.com

Introduction

Epiphytic orchids have thick fleshy roots which support the plant, convey nutrients, and absorb and retain moisture. Thus they are an essential part of the plant's well-being. In cultivation, their role remains the same, but growers cannot always replicate the plant's natural habitat or the substrate on which they naturally germinate and grow to maturity. It is obvious that when considering the cultural requirements of an epiphytic orchid the grower must be mindful of all the various exposed parts of the plant while not overlooking the root system which may be concealed within the growing medium in a pot or obscured by a mount. Such is the interest in the orchid's roots that we may overhear experienced growers discussing a plant on the show-bench and be surprised they are sometimes more interested in the potting media, roots and size of the pot rather than the leaves and flowers. As these are vitally important considerations, I have put together a few thoughts based on my understanding of why we do things the way we do, an understanding gained from listening to wise counsel, learning from experience while making all the usual mistakes, and getting used to the orchids' ability to communicate.

Orchid Roots

The roots of Australian epiphytic orchids consist of a hard, wiry core surrounded by a thick spongy layer called velamen, which takes up and holds any available water. This may be from rain, dew, fog and mists – or in our case the hose – and provides a continuous supply of water to sustain the plant through dry periods. Orchid roots change colour from white (dry) to green (full of water), a good indication of whether mounted plants have received enough water or need a second spray with the hose. Once thoroughly wet, most orchid roots like to be surrounded by fresh humid air and may die if kept very wet for too long.

Pot Size

Pots should contain just enough potting mix to contain the roots and enable them to function efficiently, the result being that orchid pots may seem too small for the size of the plant, and easily give an impression that the grower is a bit of a scrooge or too lazy to repot. To satisfy our curiosity and learn a bit more about culture, it may be a good idea to take a closer look, and if a plant is healthy and flowers regularly (check out the old raceme bases), simply ask the grower about it. Never hurts to ask! I once asked a *Cattleya* grower how he got away with growing in composted shavings and it turned out that this was a thin layer on top of a potful of straight blue metal, put there simply to maintain humidity in the air around otherwise barren stones.

Watering

Watering goes hand in hand with potting mixes as the two cannot be considered separately. Water seems to simply run down through the potting mix and on to the ground, but in travelling through it fulfils important roles. The velamen becomes wet and stores water and available nutrients for the coming days, the potting mix soaks up water and gradually releases it to maintain humidity around the roots, and the water rushing through ventilates the air spaces by drawing in clean fresh air.

Potting medium

Growers often choose a basic potting mix to suit most of their cultural requirements, and they simply adjust its composition as needed for individual orchids. Most Australian orchid mixes are bark-based with added ingredients and maybe very open (coarse ingredients) or fine (smaller ingredients). A safe starting point is chunky pine bark with a few stones mixed in, both being of a suitable grade for the roots and the size of the pot.

Humidicrib made with a plastic bag saves overwatering of young seedlings

Fogging is not a substitute for a good watering.

Plastic bag removed showing open bark mix

Sarcochilus potting mix for small pots

Sarcochilus Velvet roots at bottom of pot

Sarcochilus Velvet roots at top of pot

Sarcochilus Velvet mounted on gutter guard

Sarcochilus roots growing out of pot

Sarcochilus roots with plant growing on a mount

Plectochilus Scallywag with roots both inside pot and exposed roots

Sarcochilus roots that are dry

Sarcochilus roots that are wet

Mounted plants

These tend to be given an elevated position in the growing area where they are subjected to constant air movement and a more frequent need for moisture than the potted plants on the bench. For the health of the root systems of all the plants, it is often better to water the whole collection thoroughly and make a second pass with the hose to ensure the exposed roots of the mounted plants have filled with water, indicated by the velamen turning green. The mounted plants can then receive additional moisture in the form of misting and by maintaining a humid environment without overwatering the potted plants below.

Finally

In natural conditions, the roots of epiphytic orchids have a firm hold on a tree or rock-face and seldom remain wet for long periods. Sometimes we try too hard to keep our orchids in the best condition and use too large a pot or keep them too wet. For example, when we repot in the 'next size up' we should take into consideration that each size up is roughly double the volume of potting mix and so may need coarser ingredients and less frequent watering to maintain healthy roots. One of the pleasures of Australian orchid culture is in discovering the needs of individual plants by growing them. Experience is the best teacher.

David Butler is an experienced breeder and grower from New South Wales.

Cymbidium section *Austrocymbidium* Schltr.

Text and photos Graham Corbin | graham.n.corbin@gmail.com

Summary

There are three species of *Cymbidium* in Australia, *C. canaliculatum* R.Br., *C. madidum* Lindl. and *C. suave* R.Br. They have specific habitat requirements, and grow with long root systems, in decaying cavities in trees, often *Eucalyptus*. In D'Aguilar National Park west of Brisbane, Queensland, there is an area where all three species are found.

Introduction

In 1924, the German botanist and taxonomist Rudolf Schlechter established *Cymbidium* section *Austrocymbidium* for the three Australian species, *C. canaliculatum*, *C. madidum* and *C. suave*. These three species grow in quite different habitats throughout northern and eastern Australia and are easily recognised by their floral and vegetative characters. They are grown in many collections and usually do well under a greater range of conditions than is found in the natural habitat. They are unusual in having long root systems in decaying trees, and some of the best examples are not seen at meetings and shows, as they tend to flower over December-January when events are in recess. In most regions where they are found, there will be one or possibly two species that are easily found as full-size plants. In this article, I describe one of the regions where all three species may be seen on a bushwalk.

Taxonomy

Schlechter considered that the Australian species were distinguished by yellow-green and reddish coloured flowers and that there were two different stem types, one with inflated pseudobulbs, and another with an elongated stem. The section is "rather difficult to describe" (Du Puy and Cribb 1988), but the species have some common features allowing recognition. Three Malesian species, *C. chloranthum*, *C. elongatum* and *C. hartinahianum* have been added to the section (Cribb and Du Puy 2007). All members have densely crowded small flowers with broad obovate sepals, usually broader than the petals.

The placement of genera in the subtribe *Cymbidiinae*, of which *Cymbidium* is a member has been in a state of continuous flux since Lindley's classification in 1826, so it is not surprising that the relationships of species in *Cymbidium* sections are uncertain. Molecular studies with DNA markers have not clarified the relationships as far as in other orchid groups (Pridgeon 2009), and for the present, section *Austrocymbidium* remains as the section containing the Australian species.

Cymbidium canaliculatum

Cymbidium canaliculatum was described in 1810 by Robert Brown from a plant collected at Broad Sound (near Mackay) Queensland in 1803. He was the botanist on *HMS Investigator* during the circumnavigation of Australia by Matthew Flinders. It is mainly tropical, growing in dry areas west of the Great Dividing Range as far south as the Hunter River in New South Wales, and in Queensland, Northern Territory and the northeast corner of Western Australia. It most typically grows in ironbark trees but also less commonly in other species of *Eucalyptus* and *Melaleuca*. The species consists of a clump of large, green, egg-shaped pseudobulbs, each with up to six stiff, upright, deeply channelled leaves. The roots grow many metres into the rotting heartwood of the host tree and can form massive root systems within the tree, many times larger than the exposed part of the plant, the pseudobulbs and leaves.

Cymbidium canaliculatum flowers in September and October with racemes to 400 mm long and up to 90 flowers per raceme, creating a very spectacular sight. The flower colour is quite variable but is a yellowish-green colour with reddish-brown spotting, the amount of spotting varying dramatically. Nine

Cymbidium canaliculatum at Lake Manchester

Cymbidium canaliculatum flowers at Lake Manchester

Cymbidium canaliculatum near Cooyar

Cymbidium canaliculatum flowes near Cooyar

Cymbidium canaliculatum flowering near Cooyar

different colour forms have been described as forms, varieties and even to species level over the years, but this orchid is currently generally considered a single species of variable colour.

Cymbidium madidum

Cymbidium madidum was described by Alan Cunningham in 1839 from a plant collected from the Brisbane River as *C. iridifolium*. Unfortunately, this name was previously used in 1832 for a Himalayan orchid and John Lindley correctly described the orchid in 1940 as *C. madidum* although he incorrectly recorded the range to be the East Indies. The species grows in humid forests, typically rainforest, down the east coast of Australia from the tip of Cape York to the Bellingen River in northern New South Wales. The plant consists of a clump of large green egg-shaped pseudobulbs each with up to eight arching, flexible leaves to almost one metre long.

It flowers from August to December on racemes up to 600 mm long with up to 70 flowers per raceme. Flowers are usually yellowish to brownish green, but lime green flowered plants exist which are very attractive and sought after in cultivation.

Cymbidium suave

Cymbidium suave was described in 1810 by Robert Brown from a plant collected from Port Jackson near Sydney. It grows east of the Great Dividing Range from Cooktown in north Queensland to southeastern New South Wales in moist forests, much dryer than *C. madidum* habitat but nowhere near as dry as *C. canaliculatum* habitat. Unlike the other two Australian cymbidiums. *Cymbidium suave* does not have large egg-shaped pseudobulbs but instead has an elongated stem up to 500 mm covered in the fibrous remains of the sheathing leaf bases and tipped with up to eight green, flat, arching, flexible leaves to 500 mm long. As well as growing in tree hollows, it commonly grows in fallen logs and tree stumps and even roadside wooden guideposts.

It flowers from August to January with arching to pendulous racemes to 300 mm with up to 50 flowers per raceme. Flowers are generally brownish green but sometimes yellowish to olive green.

Members of section *Austrocymbidium* grow

Cymbidium madidum growing in D'Aguilar National Park

Cymbidium madidum flower D'Aguilar National Park

Cymbidium suave flowering in D'Aguilar National Park

Cymbidium suave flower D'Aguilar National Park

exclusively in Australia. *Cymbidium canaliculatum* has stiff deeply channelled leaves whereas *C. madidum* and *C. suave* have flat flexible leaves. *Cymbidium canaliculatum* and *C. madidum* have large egg-shaped pseudobulbs whereas *C. suave* has elongated stems. All three have long arching to pendulous racemes with multiple flowers, but this is far from unique and is characteristic of most *Cymbidium* species. The flowers of these three *Cymbidium* are quite different from each other and are all small with rather broad sepals and narrower petals.

Cymbidium suave has a yellow front of the mid lobe with a red-purple colour towards the base of the labellum, the reverse colour combination to other *Cymbidium* species, and this characteristic is passed on to hybrids.

While *C. canaliculatum* flowers are quite variable in colour, the flower form is typical of the genus *Cymbidium,* with large flat petals and sepals and the labellum with two callus ridges on the base of the mid lobe. *Cymbidium madidum* and *C. suave* do not have these callus ridges, but instead, have a tongue-shaped shiny depression on the base of the labellum mid lobe. This characteristic is unique to these two species and is not shared by any other *Cymbidium.*

Habitat

Cymbidium madidum and *C. suave* generally grow on the eastern side of the Great Dividing Range in moist forest. *Cymbidium madidum* is found in very wet forest such as rainforest and *C. suave* in dryer moist forest. Despite the difference in habitat, these two species are often found growing very close together, especially along rain forest verges. *Cymbidium canaliculatum* grows on the western side of the Great Dividing Range in dry open forest to extremely arid areas. It does not grow in moist areas where you may find the other two species.

I have found one area where all three *Cymbidium* grow closely together, not in the same habitat, but within a few kilometres of each other. D'Aguilar National Park on the western edge of Brisbane contains large numbers of all three *Cymbidium.* This is the only location where I know all three species can be found growing relatively closely.

The Lake Manchester area of D'Aguilar National Park is on the southern edge of the park and is a very dry area at just 50m elevation. The area is a collection of small hills to 150m elevation and is dominated by sparse ironbark trees with an understory of sparse tall brown grass and the weed Lantana (*Lantana camara*) which struggles in the dry conditions. Where deep protected gullies form between the hills, the conditions are far less dry and many other species of trees and shrubs grow. On the exposed hills, however, the conditions are very dry, perfect for iron back trees where *Cymbidium canaliculatum* is common. Plants grow in the cavity of broken limbs but will also grow in tree forks. They seem to grow in any part of the tree where the bark is damaged and their roots can penetrate into the tree. *C. canaliculatum* roots are never exposed as with most other epiphytes and only grow within the heartwood of trees.

Many young plants are growing in the ironbarks with less than ten pseudobulbs as well as many older plants with over fifty pseudobulbs. This shows that the dry conditions are favourable to seed germination and the growth of seedlings into mature plants. The plants, large or small, are dominated by leafless pseudobulbs with only ten or twenty per cent of pseudobulbs retaining their leaves, irrespective of plant size. While the orchids are growing, their general lack of leaves shows that the conditions are not optimal.

C. canaliculatum is also found in large numbers just beyond the northern edge of D'Aguilar National Park in open farmland bordering the park and continues to grow in dry habitat west of the park. Many of these grow much better than the plants at Lake Manchester and are larger, retaining all their leaves. A grazing paddock near Cooyar has a sparse canopy of *Eucalyptus* trees with short, grazed grass and understory containing two trees with three large *C. canaliculatum* plus smaller plants growing in nearby trees. The area is quite dry and open, but the orchids seem to enjoy the conditions. The photos show that these orchids are very large, with virtually all pseudobulbs retaining their leaves. The flowering creates a very spectacular sight. Any orchid grower would love to have such a spectacular specimen orchid in their collection and these plants grow without regular watering, fertilizing and fungicide.

From Lake Manchester, travelling north approximately eight kilometres the elevation climbs from 50 m to the top of the range at 550 m.

As you start to climb, the number of ironbark trees decreases, and other *Eucalyptus* start to dominate but the understory remains as dry sparse grass tussocks. Climbing ever higher, the ironbark trees disappear entirely only to appear again as the dominant tree species on dry exposed ridges before disappearing again. *Cymbidium canaliculatum* is missing entirely and *Dendrobium aemulum* start to appear in large numbers on the trunks and large branches of the ironbarks. A large ironbark will host more than fifty mature *D. aemulum*. In these areas, *C. suave* is starting to appear in the upper branches of the eucalypts. They typically grow in tree forks or broken branch hollows with their elongated stems protruding conspicuously from the tree, but unlike *D. aemulum*, typically only a single plant will occur on each tree.

Cymbidium suave does not form large plants like *C. canaliculatum*. A large plant of *C. suave* typically has ten or twenty elongated stems all protruding from the tree giving an open appearance rather than the solid densely packed appearance of *C. canaliculatum*.

Climbing even higher the ridges remain dry, supporting an open forest of eucalypts with a sparse dry grass understory with the occasional grass tree (*Xanthorrhoea* sp.). The protected steep gullies below are quite moist supporting pockets of rainforest, but the ridges are extremely steep preventing access. Near the crest of the range, the rainforest starts and the *C. madidum* grow here. They are also found in the moist forest areas bordering the rainforest where they grow high in eucalypt trees. In the rainforest, *C. madidum* seem to grow in high positions in almost any type of tree.

Like *C. canaliculatum*, *C. madidum* will form large clumps of solid pseudobulbs almost hidden by leaves. A large plant can be one meter in diameter of bulbs. Given a growth rate of one pseudobulb per year per growing lead, these large plants must be very old. Neither *C. madidum* nor *C. suave* puts on the floral display of *C. canaliculatum* where the plant almost disappears in flowers, but large plants still put on a spectacular floral display.

While the three Australian *Cymbidium* of section *Austrocymbidium* require very different conditions, all three species are found growing in large numbers in just a single day's strenuous walk climbing from Lake Manchester to Mt Glorious in D'Aguilar National Park. For the less active, I would recommend driving to both Lake Manchester and Mt Glorious where relatively short walks can find all three species.

References

Cribb PJ and Du Puy D 2007 *The Genus Cymbidium*. Royal Botanic Gardens, Kew

Du Puy D and Cribb PJ 1988 *The Genus Cymbidium*. Timber Press.

Jones DL 2021 *A Complete Guide to Native Orchids of Australia*. Reed New Holland Publishers.

International Plant Names index, https://www.ipni.org

Pridgeon 2009 *Genera Orchidacearum Vol. 5* p56 Oxford University Press

Graham Corbin is an ANOS judge with a passion for Australian orchids. He likes to spend time bushwalking and locating and photographing orchids in their natural habitat, especially in southeast Queensland and in every state of Australia.

AUSTRALIAN DECIDUOUS TERRESTRIAL ORCHIDS

Available as....

Bare root plants: May - August

Dormant tubers: November - February

Easily grown species and hybrids from a range of genera including: *Chiloglottis, Corybas, Cyrtostylis, Diuris, Microtis, Pterostylis* and *Thelymitra.*

NESBITTS ORCHIDS
PO BOX 72
WALKERVILLE, SOUTH AUSTRALIA 5081
Phone: 0411 561 220
Email: lesn@adam.com.au

397 *Bulbophyllum gadgarrense* 'Wilmar' ACC/ANOS 2019 (QLD)

Points	83.0
Owner	Williams, W
Date & Event	13 September 2019
Photos By	G.Corbin & A.Neylon
#Flowers/inflorescences	893 and 7 buds / 900
Measurements (mm):	
Flower: 3.51 vert. 2 Petal: 1.5L, 1W Sepal: 3L, 1W	Dorsal: 2.5L, 1W Labellum: 1L, 0.5W Inflorescence Length: 2
Detailed avg. points:	
Shape (25): Colour (20): Size (15):	Substance/Texture (10): Floriferousness (15): Habit/Attractive (15):

398 *Dendrobium* Alice's Mark Bron 'Eleanor Lucy' HCC/ANOS 2020 (QLD)

Points	79.50
Owner	Noy, Colin and Denise
Date & Event	16 February 2020
Photos By	Colin Noy
#Flowers/inflorescences	106 / 3
Measurements (mm):	
Flower: 60, vert. 46 Petal: 35L, 6W Sepal: 24L, 5W	Dorsal: 22L, 6W Labellum: 26L, 6W Inflorescence Length: 663
Detailed avg. points:	
Shape (25): 19.3 Colour (20): 15.7 Size (15): 12.3	Substance/Texture (10): 7.8 Floriferousness (15): 11.7 Habit/Attractive (15): 12.3

399 *Dendrobium bracteosum* 'Gayle Maree' HCC/ANOS 2020 (QLD)

Points	76.50
Owner	Williams, W
Date & Event	14 February 2020
Photos By	Gary Yong Gee
#Flowers/inflorescences	395 / 25
Measurements (mm):	
Flower: 26, vert. 18 Petal: 14L, 6W Sepal: 15L, 4.5W	Dorsal: 15L, 4.5W Labellum: 7L, 2.5W Inflorescence Length: 23
Detailed avg. points:	
Shape (25): 19 Colour (20): 15.2 Size (15): 11.7	Substance/Texture (10): 7.4 Floriferousness (15): 11.5 Habit/Attractive (15): 11.6

Royal Botanic Gardens Victoria
RBG00022465

400 *Sarcochilus hartmannii* 'Jileung' AM/ANOS 2020 (NSW)

Points	80.10
Owner	Chan, Yin and Sau-wan
Date & Event	18 October 2020
Photos By	Yin Chan
#Flowers/inflorescences	97 and 23 buds / 12
Measurements (mm):	
Flower: 27.6, vert. 27.6 Petal: 12.4L, 11W Sepal: 12.4L, 10.9W	Dorsal: 12.9L, 11.6W Labellum: 6.6L, 5.5W Inflorescence Length: 220
Detailed avg. points:	
Shape (25): 20.2 Colour (20): 16.8 Size (15): 12.2	Substance/Texture (10): 7.7 Floriferousness (15): 11.4 Habit/Attractive (15): 11.8

401 *Sarcochilus* Judith 'Millie' HCC/ANOS 2021 (VIC)

Points	77.20
Owner	Adams, Peter and Sheryl
Date & Event	7 January 2021
Photos By	Peter Adams
#Flowers/inflorescences	29 and 6 buds / 3
Measurements (mm):	
Flower: 36, vert. 43 Petal: 16L, 13W Sepal: 15L, 12W	Dorsal: 20L, 15W Labellum: 8L, 7W Inflorescence Length: 213
Detailed avg. points:	
Shape (25): 19.2 Colour (20): 16.2 Size (15): 12	Substance/Texture (10): 7.6 Floriferousness (15): 11 Habit/Attractive (15): 11.2

ANOS Groups and Societies

Current contact details can be found at **anos.org.au** or in the individual group website.

Queensland

ANOS Beenleigh Inc.
ANOS Kabi Inc.(Brisbane)
ANOS Mackay and District
ANOS Townsville Inc.
Native Orchid Society of Toowoomba Inc.

New South Wales

ANOS Central Coast
ANOS Far North Coast Inc.
ANOS Illawarra
ANOS Macarthur and District
ANOS Mid-North Coast
ANOS Newcastle Inc.
ANOS Sydney Inc.
ANOS Warringah Inc.

Victoria

ANOS Geelong Inc.
ANOS Melbourne Suburbs Group Inc.
ANOS Victoria Inc.

South Australia

Native Orchid Society of South Australia Inc.

Western Australia

ANOS Western Australia Inc.

New Zealand

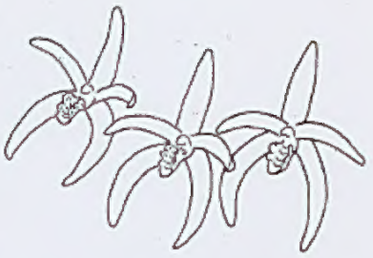
ANOS New Zealand Native Orchid Group

19th DENDROBIUM SPECIOSUM SPECTACULAR

& AUSTRALASIAN ORCHID SPECIES and HYBRID SHOW (2021)

Kempsey, NSW

(Ted & Winsome Walmsley and ANOS Mid North Coast Group)



Dates for this event which provides a first class opportunity to see some of the best speciosums in flower as well as a wide range of other Australasian orchids and hybrids, are given below. Note the dates and plan to be there as this will be the final such show. All are welcome to exhibit and judging will be by an all ANOS panel. Monetary prizes and trophies will be awarded in a range of classes including species, hybrids and terrestrials.

Interstate entries are encouraged with a prize for the most travelled orchid.

***Dates*: Sat 4th Sept 10am to 4pm [Closed for judging b/w 11am and 12 noon this day]**
Sun 5th Sept 9am to 2pm

***Location*: Kempsey Dirt Bike Track, Alverton St., Greenhill, via Kempsey.**

***Details*: Refer to the website: www.kempseyspeciosumspectacular.com.au OR contact Ted Walmsley on (02) 6562-7150 or John Zietsch on (02) 6554-9733.**

Australasian Native Orchid Society website:
www.anos.org.au

Australasian Native Orchid Society Inc.
Established 1963
Welcome to ANOS Inc.
The Australasian Native Orchid Society Inc. is the major organisation promoting the understanding and appreciation of orchids growing naturally in our region of the world – Australia, New Zealand, New Guinea and the adjacent western Pacific.
We focus on a number of areas including conservation, research, breeding of species and hybrids, culture,

Details about ANOS

A complete listing of all ANOS Awards with images

Current editions of Constitution,
By-laws, and Judging Handbook

Links to ANOS Groups,
news, events, conservation activities
and contact information

ANOS Inc. Membership

Personal membership of ANOS Inc. includes a subscription to *The Orchadian*. Individuals suscribing to *The Orchadian* will automatically receive membership of ANOS Inc. Members receive four issues a year and have full voting rights at the AGM.

An optional two year membership/subscription, is strongly encouraged for yourself and increasing efficiency for the Membership Officer, Secretary and Treasurer.

Subscription Rates (in $AU)

1 July 2020 - 30 June 2021

Australia	$55.00
New Zealand	$65.00
Asia/Pacific	$70.00
Rest of World	$80.00

Subs will be due from 1 July 2020.

The membership/subscription form is avilable on line at: www.anos.org.au

Dendrobium bracteosum 'Gayle Maree' HCC/ANOS 2020 (QLD)

Photo Gary Yong Gee